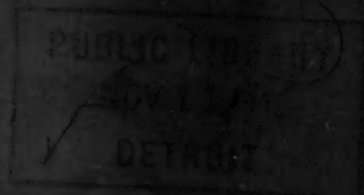


READING COPY DEPARTMENT

PURCHASING

NOVEMBER, 1948



George A. Ireland:

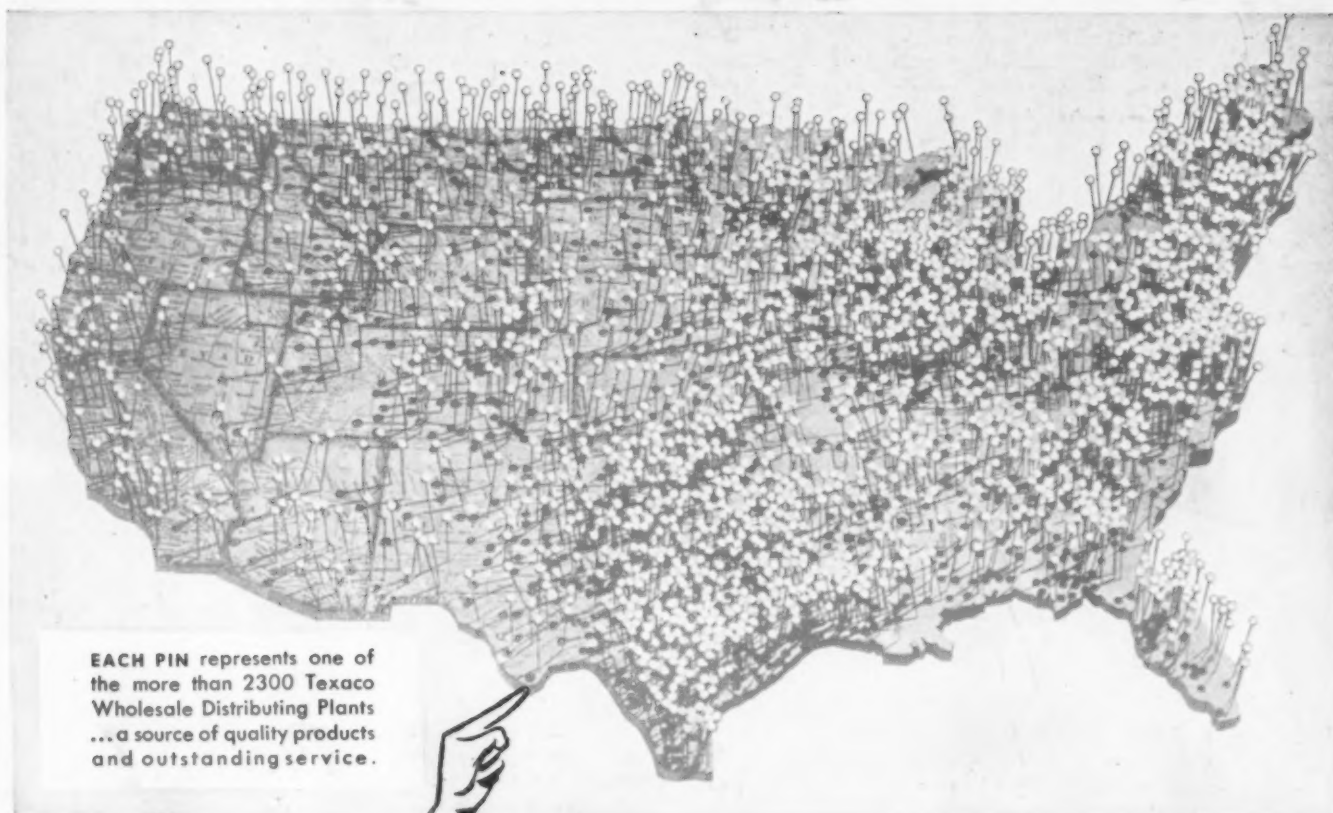
Good Will Pays Dividends

See Page 89

Table of Contents

Pages 83-87

A CONOVER-MAST PUBLICATION



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small... your manufacturing can increase your production, and reduce unit costs with the Engineering Service.

ork," Texaco serves plants of conditions... in all 48 States. orks with your production men e experience. Thus, he is better erating economies.

Engineering Service, just call ng Plant, or write The Texas ork 17, N. Y.

ls and Service

newspaper for time and station.



For Any Atmospheric Hazard There's a **CENTURY MOTOR**— Properly Protected—To Assure Continuous Performance

To protect motors against the hazards of abnormal atmospheres, Century provides Totally Enclosed Fan Cooled and Explosion Proof frames, also Splash Proof.

These are in addition to open type frames on which the upper half of the frame is protected against falling or dripping particles.

Whatever your requirements there's a Century motor designed to accurately meet the needs of your equipment.

The illustrations here are typical of the variety of applications which are successfully powered by Century motors.

1—Century 7 1/2 horsepower *totally enclosed fan cooled* motor drives an elevator leg in a dusty, dirty atmosphere.

2—Century 5 horsepower *explosion proof* motor provides protection against explosions at a gasoline storage plant.

3—Three horsepower Century *splash proof* motors provide protection from splashing water as well as from all kinds of weather conditions on a railroad car-washing unit.

4—Century 100 horsepower *general purpose* motors are used to drive air compressors in clean surroundings.

Century builds a complete line of fractional and integral horsepower electric motors in sizes from 1/6 to 400 horsepower to meet the requirements of industrial production, commercial and appliance needs.

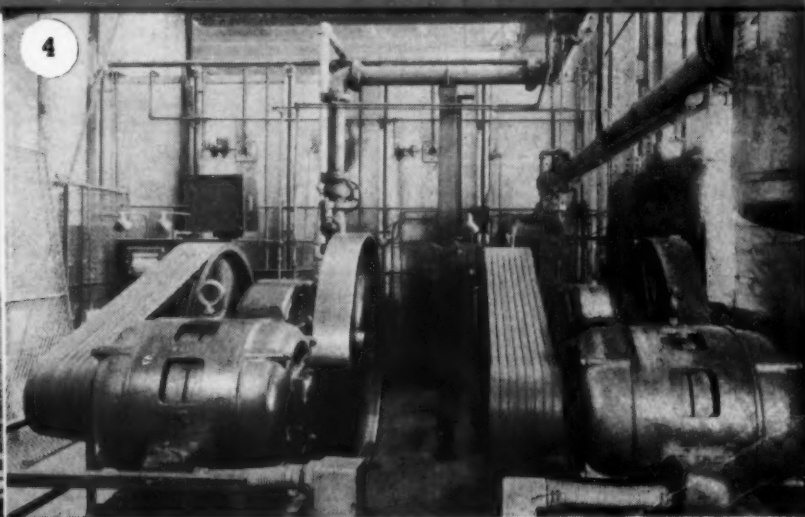
Specify Century for all your electric power requirements.

CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri
Offices and Stock Points in Principal Cities



CE592



PURCHASING, published monthly, by PEEAYE, INC., subsidiary CONOVER-MAST PUBLICATIONS, INC. Publication Office, Orange, Conn. Editorial and Executive Offices 205 East 42nd St., New York 17, N. Y. Entered as second class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription rates: United States; U. S. Possessions and Canada: \$4 per year, \$6 for two years; elsewhere \$6 per year, \$9 for two years. Single copies 50c. Volume XXV, No. 5.

A BUYING GUIDE FOR ABRASIVES



ABRASIVE PROBLEM:

How can Selection and Application be simplified?



ANSWER BY
CARBORUNDUM
TRADE MARK

Through an extensive program, The Carborundum Company is making selection and application of the best abrasives to use for specific jobs simpler and more efficient. "Series 20" is a timely example. In a relatively narrow pattern of grits and

grades, these wheels cover a wide range of grinding operations. The smaller number and variety of wheels that need be stocked is only one of several important benefits realized.

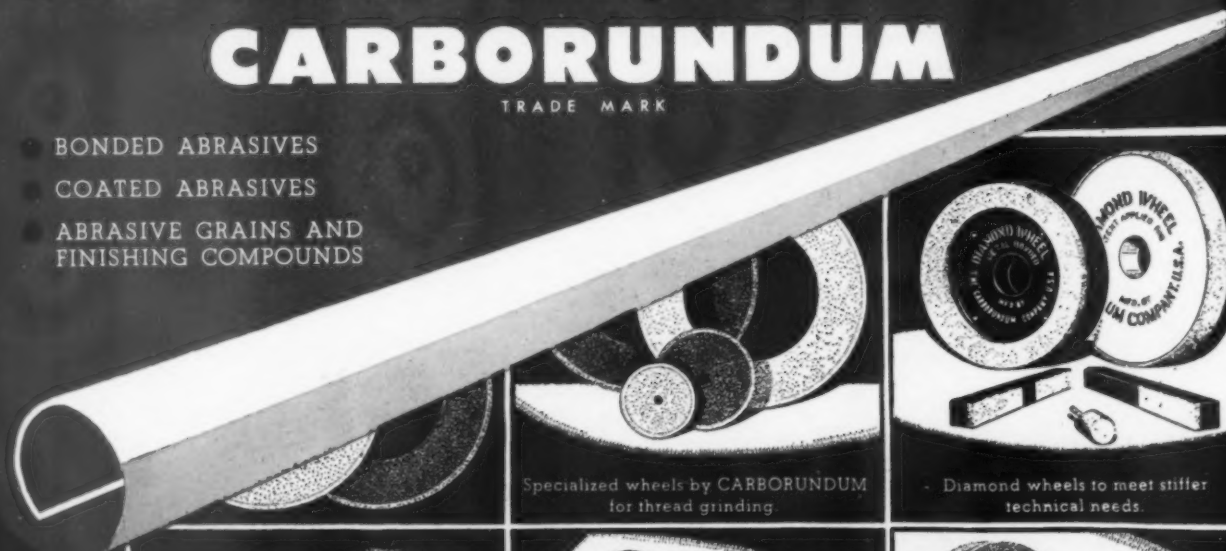
Easier to specify and order, products by CARBORUNDUM, repackaged and relabelled for fast identification, explain another reason for their growing preference by users of abrasive products. The Carborundum Company, Niagara Falls, New York.

A Good Rule for Good Grinding... CALL IN

CARBORUNDUM

TRADE MARK

- BONDED ABRASIVES
- COATED ABRASIVES
- ABRASIVE GRAINS AND FINISHING COMPOUNDS

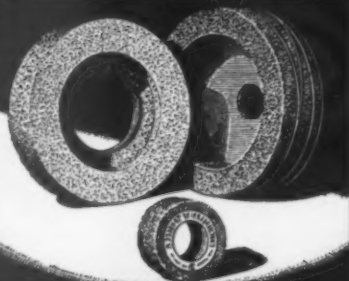


Specialized wheels by CARBORUNDUM for thread grinding

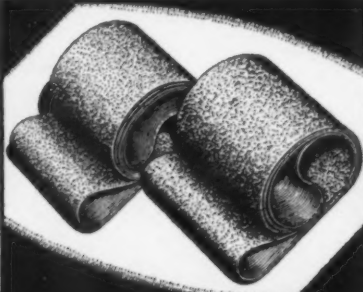
Diamond wheels to meet stiffer technical needs



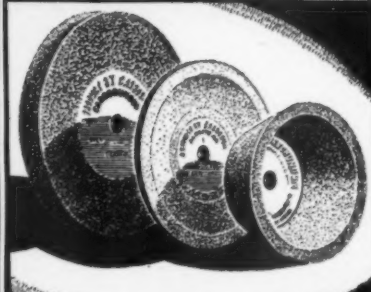
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company.



Good cutting GREEN GRIT wheels for cemented carbide



A coated abrasive for every sanding and finishing condition



All standard shapes are supplied in grinding wheels by CARBORUNDUM.

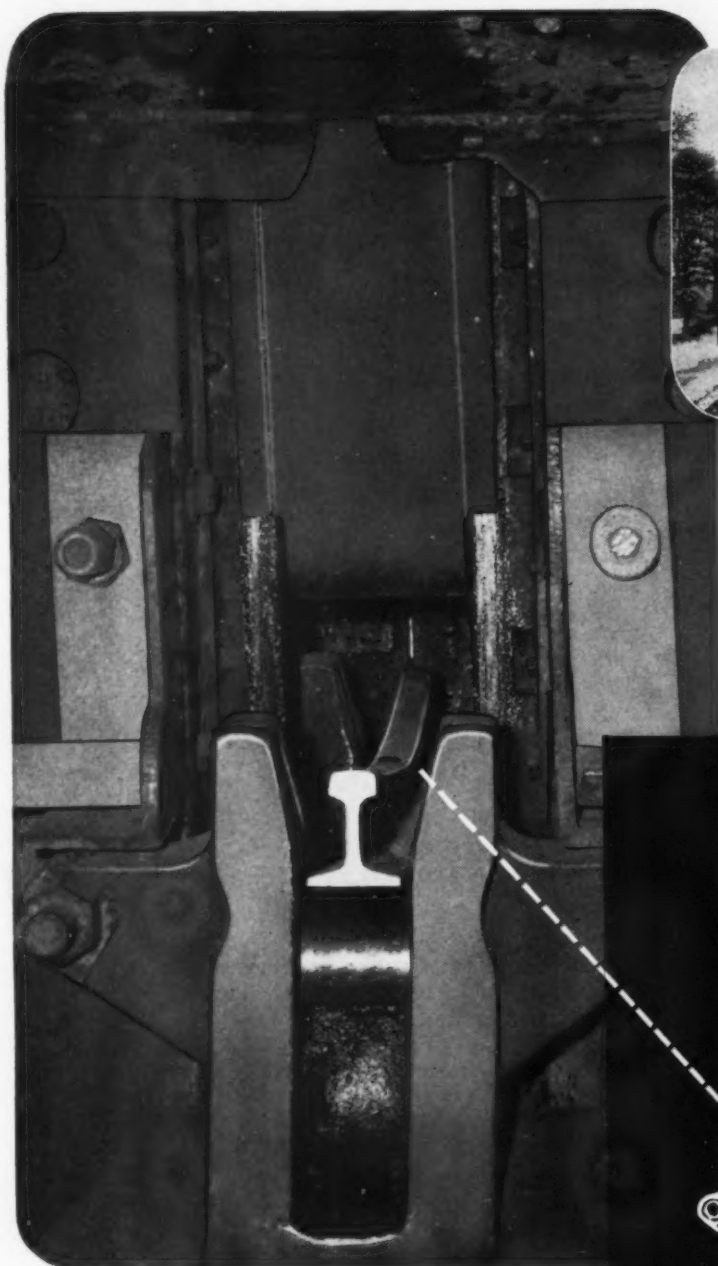
TECHNOLOGY DEPARTMENT

A KNOCK-OUT DROP...

that helps railroads set remarkable safety records

NOV 11 1948

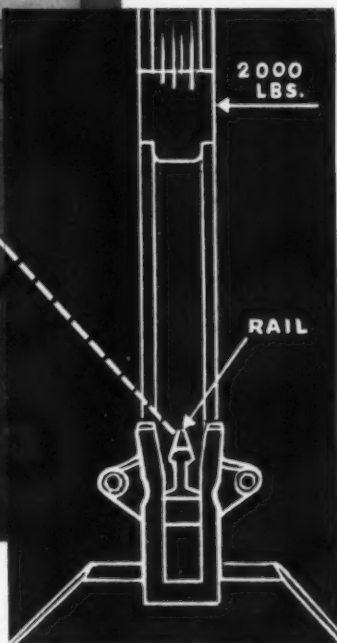
DETROIT



ONE important way Inland is helping America's railroads continue to build impressive safety records is by *drop testing* . . . a punishing procedure for determining a steel rail's ductility and resistance to impact. In this test, a 2000-pound weight plunges from heights up to 22 feet . . . smashes down on supported sections cut from representative rails from each heat rolled. Careful examination is then made of each test section to make sure the rail meets rigid AREA and Inland standards.

The *drop test* is just one of many used by capable Inland metallurgists to prove that the rails Inland supplies to the railroads *more than* meet the demands of today's higher train speeds, heavier power units, and increased traffic. INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

Rail test section, above, after being hammered by one-ton weight dropped from 22-foot height.

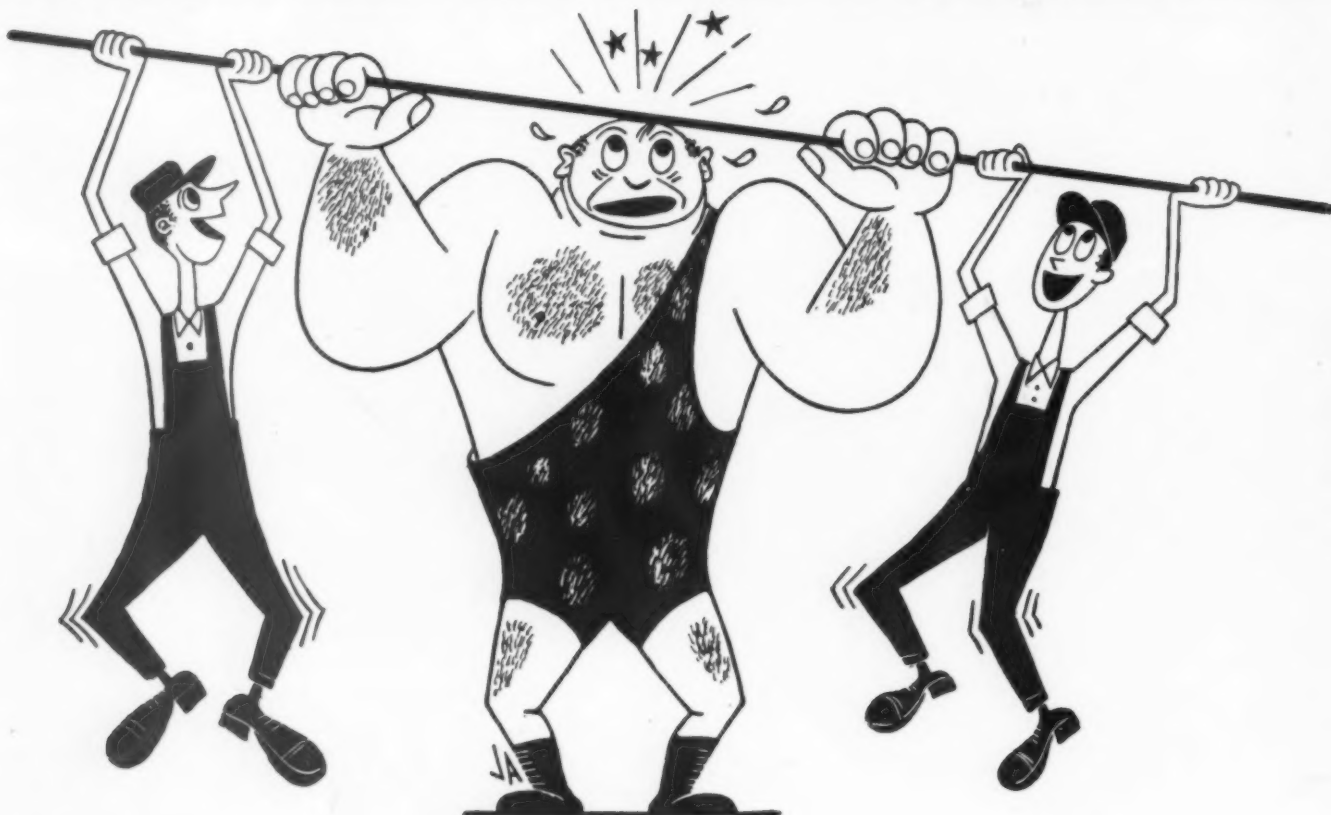


INLAND STEEL

... QUALITY RAILS and TRACK ACCESSORIES

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • STRIP • TIN PLATE • FLOOR PLATE • REINFORCING BARS

U·S·S Carillo Steels feature GUARANTEED MINIMUM HARDENABILITY



**SYMBOL
OF SERVICE**

for Steel Users



When you order U·S·S Carillo Steels, you are sure of two things:

Reliable performance which comes from alloy steel manufactured to a *Guaranteed Minimum Hardenability*.

Prompt filling of your orders through our large and diversified stocks.

And there is another and very important advantage—an additional metallurgical service—to users of U·S·S Carillo Steels:

You are supplied with a Heat Treatment Guide which contains complete and specific information on the steel you receive with each shipment. That is, you get *specific* data on the composition, potential physical properties and recommended heat treatment temperatures to help you obtain the maximum performance from the steel furnished on your order.

Just telephone, wire or write the U·S·S Supply warehouse nearest you.

UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1319 Wabansia Ave., P. O. Box MM	BRUnswick 2000
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UNITED STATES STEEL

These OSBORN BRUSHES are REAL COST CUTTING TOOLS!

For industrial production and maintenance operations



Because of zooming production costs and the ever narrowing gap between profits and actual operation losses, industry is alerted to the need for better, more efficient time and labor saving tools. And Osborn Power Driven Brushes, Paint Brushes and Maintenance Brushes are finding ready acceptance for many industrial applications.

Specific example is the Osborn Monitor Wire Wheel Brush, shown in the upper left photo, used for deburring and removing sharp edges on the outside of ball bearing separators at the Jamestown, N. Y. plant of the Marlin-Rockwell Corporation with improved production of 400%!

In maintenance, too, management has learned the value of efficient cleaning tools—for sweeping, dusting, washing or scrubbing. The new light weight, "work balanced," full tufted Osborn Master Sweep Floor Brush, shown in the center photo, sharply reduces sweeping costs by cleaning larger areas easier and in less time.

Osborn's complete line of paint and varnish

brushes includes every type of painting tool required by industry. Typical of hundreds of industrial users, Pan American World Airways System has standardized on Osborn's better built brushes for their Latin American Base in Miami, Florida. The upper right photo illustrates a refinishing application on the exterior of a PAA air liner.

There is hardly a product — or material — or service — which cannot be made better and for less money by the correct use of Osborn brushing tools and new brushing techniques. Let us send a trained field engineer to make a study of your present or projected operations without obligation. He'll tell you frankly if and how Osborn can help cut your maintenance and production costs.

Osborn Brushes are stocked by leading industrial supply distributors.

THE OSBORN MANUFACTURING COMPANY
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Cleveland, Ohio



WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY • POWER DRIVEN BRUSHES • PAINT BRUSHES • MAINTENANCE BRUSHES



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Richmond District Manager
Started 1924, as a Warehouseman



W. FRAZIER
Kansas City District Manager
Started 1911, as an Office Boy



A. D. HAMMOND
Atlanta District Manager
Started 1906, as a Clerk



H. L. HARPER
Los Angeles District Manager
Started 1904, as a Stock Clerk



W. E. HENGES
Cleveland District Manager
Started 1913, as a Receiving Clerk



R. W. KIMBERLIN
St. Louis District Manager
Started 1922, as a Sales Record Clerk



J. P. LAWTON
Seattle District Manager
Started 1923, as a Warehouseman



W. H. MacCRELLISH
Boston District Manager
Started 1907, as a Shop Clerk



G. T. MARCHMONT
Dallas District Manager
Started 1908, as a Service Clerk



J. A. MAYER
Philadelphia District Manager
Started 1913, as an Equipment Installer



C. H. McCLEAN
Minneapolis District Manager
Started 1913, as a Warehouseman



HERBERT METZ
New York District Manager
Started 1914, in the Student Course



R. B. SAYRE
Jacksonville District Manager
Started 1921, as a Warehouseman



D. WALLACE
Pittsburgh District Manager
Started 1922, as an Assistant Accountant



L. B. WESTFALL
Cincinnati District Manager
Started 1916, as a Service Clerk



E. R. YONKERS
Detroit District Manager
Started 1933, as a Salesman

**Graybar OFFICERS
AND DISTRICT MANAGERS
ALL BEGAN
"IN THE RANKS"**



A. C. LAMPERTI
Secretary
Started 1920, as a Bookkeeper



R. B. WILKINSON
Treasurer
Started 1915, as Errand Boy



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Started 1910, as a Salesman



G. J. COSSMANN
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Started 1900, as a Voucher Clerk

* 815 YEARS of electrical experience

*average service 34 years

Experienced men make an experienced organization.

Graybar — the oldest and largest wholesaler of “everything electrical” — has built its business upon two basic policies:

- (1) serving customers well;
- (2) filling key jobs from within.

Over the years, this second policy has developed office boys and clerks into department heads, district managers, and corporate officers.

With such opportunity for advancement,

every Graybar employee has a powerful incentive to do his job well. The natural result has been a continual improvement in our service to a continually growing list of customers.

Graybar is *totally owned* by its operating and retired personnel. That's another reason why every Graybar employee is personally interested in meeting your electrical needs accurately, helpfully, and as rapidly as possible. *Graybar Electric Company, Inc. Executive Offices: Graybar Building, New York 17, N. Y.*

48A2

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ELECTRICAL ITEMS ARE
DISTRIBUTED THROUGHOUT
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USE**

**EFFICIENT
OF.....**



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With this Data Book 1815 on your desk, you have at your finger tips the whole story of Link-Belt Gearmotors, with engineering data, selection tables and application suggestions making the selection and use of Gearmotors quicker and easier.

Precision and rugged stamina combine to make the Link-Belt Gearmotor a high-quality, long-lived, efficient power transmission unit. Gears are precision hobbled and shaved from heat-treated alloy steel. Ball and roller bearings are of ample size with output shaft and bearings proportioned to carry heavy overhung loads. Sturdy gray iron cast housing assures permanent alignment.

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YOUR COPY
OF BOOK 1815**

LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5,
San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.
Offices, Factory Branch Stores and Distributors in Principal Cities.

11,189



Power Transmission Machinery

CAN YOU BEAT IT?

**10 SECONDS
to cut 2¹/₂"
Electric Cast Steel**



ATKINS "Curled Chip" MILLING SAWS

To be sure milling saw performance like this — reported by one Atkins user — is outstanding, even for an Atkins. But it does show why it will pay you to take a long, careful look at your own cutting operations.

It's easy to see why the Atkins "Curled-Chip" Method of metal cutting so often results in sensational reductions in cutting costs. Where the conventional angular tooth must push against a vertical face, the inward-curving Atkins "Curled-Chip" Tooth gets under the chip and lifts it in a continuous clockspring-like coil. Result: less tooth-dulling heat—faster cutting speeds—heavier feeds—cleaner, truer cuts that need less re-machining.

To find out just what this can mean to you, check with your distributor today. Ask him to have an Atkins Cutting Engineer arrange a demonstration on any work you choose.

ATKINS "CURLED-CHIP" SEGMENTAL SAW



Engineered to increase cutting under the toughest demands of heavy-duty sawing machines. "Curled-Chip" teeth in segments permit consistently narrower cutting width. Worn-out teeth can be quickly replaced without discarding the saw disc.

ATKINS

"Silver Steel" SAWS

E. C. ATKINS AND COMPANY • Home Office and
Factory: 402 S. Illinois Street, Indianapolis 9, Indiana
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Atlanta • Chicago • New Orleans • New York • San Francisco



MAKERS OF BETTER SAWS FOR EVERY CUTTING JOB



Secret of a split-second click!

SET your camera for the split-second timing you want. Flick the exposure lever. Click! That's it!

A tiny spring of music wire, as small as .006" in diameter, makes this possible. It momentarily stores the power of your flick, then releases this power, precisely controlled, to click the shutter. Chances are your own camera has a shutter spring much like one of those shown above. Chances are, too, that it is formed of wire from National-Standard's Worcester Wire Works Division, for here special music wire is produced continually for America's leading camera makers.

Camera makers are particular people. To give you equipment with lifetime reliability, to give you *good* pictures, even the wire for such tiny springs must be the finest of its kind . . . a job for experts. Imagine the painstaking care, the highly developed techniques necessary to produce this fine wire with its essential uniformity, high tensile strength, temper and perfect finish.

Music wire in its various types and sizes has an infinite number of uses, but is only one of many special kinds of wire produced at Worcester Wire Works. If *you* have a need for special-purpose wire, Worcester Wire Works specialists, as always, welcome the chance to show you what cooperation really means.



DIVISIONS OF NATIONAL-STANDARD CO.

ATHENIA STEEL . . . Clifton, N. J.	Flat, High Carbon, Cold Rolled Spring Steel
NATIONAL-STANDARD . . . Niles, Mich.	Tire Wire, Fabricated Braids and Tape
WAGNER LITHO MACHINERY . . . Jersey City, N. J.	Lithographing and Special Machinery
WORCESTER WIRE WORKS . . . Worcester, Mass.	Round Steel Wire, Small Sizes



1. PLASTICS—You should have a copy of "Injection Molded and Extruded Plastics", 48-page booklet, in color, published by the Elmer E. Mills Corporation, for it will give you a clear understanding of the qualities of the principal thermoplastic materials, injection molding and extruding and the products thereof, facilities of the Mills Corporation, and fine color illustrations of numerous thermoplastic products. Mills Plastic tubing and fittings are also described. Feature of the book is large chart giving detailed information on properties of principle types of plastics.

2. PACKING MANUAL—"Speed Packing Manual" issued by the Sherman Paper Products Corporation tells how to save up to 60% on packaging costs—time, material, weight and cube, with Corroflex, V-Line and Corroflex Tube-tainer. It contains 8½" x 11" sample sheets of these various materials with information on their qualities and recommended uses, for all types of packaging, including corrosion-prevention.

3. LUBRICATION—Centralized lubrication is the subject of Bulletin No. 25 issued by the Farval Corporation.

4. MACHINERY STEEL—Four-page bulletin describes Rytense AA, a medium carbon manganese free cutting machinery steel that is said to offer many economies in the production of machined parts. Joseph T. Ryerson & Son, Inc.

5. ELECTRICAL SWITCHES—Catalog of 20 pages covers the Acro Electric Company's Snap-Action "rolling spring" switches.

6. MOTOR-GENERATOR—Motor-generator sets for all low voltage applications such as electroplating, electro-cleaning, anodizing, Manodizing, electrocoloring, metals refining, etc., are the subject of Bulletin G-102. Bulletin lists and illustrates generators ranging in size from 300 amps. to 40,000 amps, at 6 volts to 40 volts. Hanson-Van Winkle-Munning Co.

7. NICKEL ALLOYS—International Nickel Company's revised List "A" of current publications on nickel alloy steels, nickel cast irons, nickel brass and bronzes, and nickel plating is now available. Publications offered cover the production, fabrication, properties and uses of Nickel Alloys for industrial applications, and the production, properties and use of Nickel electrodeposits.

8. pH PAPERS—Bulletin describes pH papers for the determination of pH value in acid and alkaline solutions. Paul Frank.

9. CARBIDE GAGES—Case history brochure tells how carbide gages cut inspection costs in series of case studies, with less gage replacement, less gage checking, and more parts passed. Lincoln Park Industries, Inc.

10. VALVES—80-page catalog covers the Stockholm Pipe Fittings Company's line of bronze valves and iron body valves, illustrating each type with photograph and line drawing, and giving full information with illustrations, dimensions, sizes, use and construction features.

11. POSITION-ADJUSTING CONTROLS—Some of the many ways that modern automatic controls are helping industrial users to improve operating efficiency are outlined in newly revised 40-page catalog—"L&N Electric Control, Position-Adjusting Type" just issued by Leeds & Northrup Company. Control is applicable to practically any process which can be controlled by moving a valve, vane or damper.

12. GEARS—132-page catalog detailing spur gears, bevel and mitre gears, cut worm and worm gears, rawhide, fabroil, bakelite, spiral, helical, herringbone, rack, internal gears and sprocket, has been issued by the American Stock Gear Co.

13. PULLEYS—New catalog "Continental Pulleys" covers transmission and conveyor pulleys of all types, cast iron, steel, and

wing type. Industrial Divn., Continental Gin Co.

14. STAINLESS STEEL POWDER—Hardy stainless steel powder, Type 18-8, a refractory metal powder, and 18-8 stainless steel paste for corrosion resistant surfaces and tough coating jobs, are the subject of bulletins released by Charles Hardy, Inc.

15. COLD DRAWN STEELS—New 28-page booklet, describing cold finished steel bars has been released by the Union Drawn Steel Division of Republic Steel Corp. Information includes typical uses and mechanical properties of the types most frequently used, including machining grades of stainless, as well as data on commercial finishes, sizes, and tolerances.

16. ELECTRICAL TAPES—39 "Scotch" brand electrical tapes are described in 24-page two-color catalog announced by Minnesota Mining & Mfg. Co. Catalog contains 86 photographs of electrical tape applications. Tape properties are detailed.

17. CYLINDRICAL GRINDERS—Landis Tool Company's standard and special purpose cylindrical grinders are the subject of new 28 page catalog. These include universal, plain, roll, crankshaft, cam, valve, multiple wheel and race grinders.

18. DEMINERALIZED WATER—26-page booklet "Filt-R-Stil Demineralizers Deliver Low-Cost Chemical Equivalent of Distilled Water", cites the advantages of demineralized water over distilled water, and describes the chemical and mechanical principles of demineralization by ion exchange. American Cyanamid Co., Ion Exchange Products Dept.

19. UNIT HEATERS—Cabinet type unit heaters are described in catalog 6548 issued by the Young Radiator Co. The new line consists of 3 distinct models with 3 sizes in each style. Heaters may be used with steam or hot water systems.

20. RADIO & ELECTRONICS—Allied Radio Corporation announces the publication of its 1949, 180-page catalog covering "Everything in Radio and Electronics", with special emphasis on industrial maintenance, research and production.

21. SAFETY APPAREL—48-page catalog No. 11 gives complete details and illustrates safety apparel for head to foot protection for industrial workers. Comprehensive line includes gloves, footwear, helmets, leggings, sleeves, welding protection, clothing, etc., etc. Dunn Products.

22. BURNISHING MACHINES—Pivot polishing machines for the instrument, meter, clock and watch trades, and grinding machines and attachments, are the subject of bulletin released by Hauser Machine Tool Corp.

23. WIRE ROPE MANUAL—"Know Your Ropes" is the subject of manual on selection, application and usage of wire rope, that tells how to make wire rope last longer. Its 82 pages are profusely illustrated, and the book will prove of educational value to every person connected with the buying and use of wire rope. Wickwire Spencer Steel Division.

24. AN CONNECTORS, FITTINGS—New issue of American Phenolic Corporation's (Please turn to page 16)

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
Four Pages — 14 - 16 - 19 - 20

Use convenient prepaid postcards on pages 19 & 20

Subject: CURVED TOOTH FILES

"THE RIGHT FILE
FOR THE JOB"

conserves materials, saves workmen's time,
improves results—cuts production costs.
This is one of a series of advertisements
on kinds and uses of files. Save it, with the
others, for shop and purchasing references.

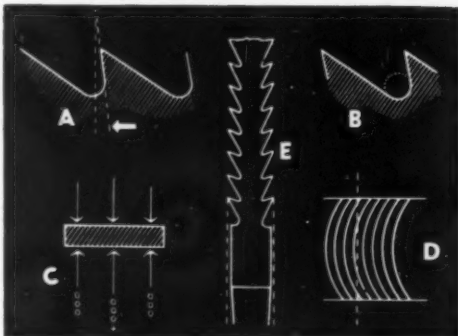
Prepared by Nicholson File Co.



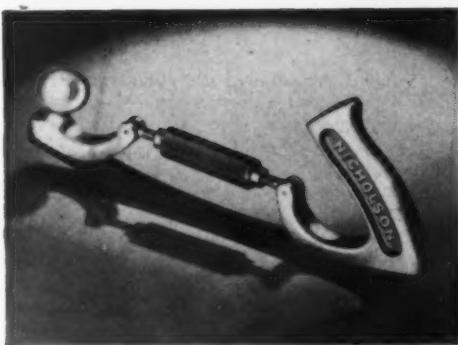
Nicholson Superior Milled Curved Tooth File
(Flat Rigid Tanged Type)

NICHOLSON SUPERIOR MILLED CURVED TOOTH FILES are made on newly designed Nicholson machinery and embody important improvements that fully justify the "superior" part of their name. Widely used by the automobile manufacturing and repairing industry on body work, they are nevertheless of great practical value in many other types of shop work. They are ideally fitted for smooth work on sheet and other steels up to the hardness of commercial annealed tool steel; and on cast iron, bronze, aluminum, zinc, babbitt, lead and plastics.

CONSTRUCTION. In the aggregate, little things make big differences in curved tooth files. Note the technical distinctions described and illustrated here. (A) Teeth have the proper face angle (positive) for good bite without pinning up. (B) Gullets are carefully designed and smoothly rounded for minimum clogging. (C) Cross-section has very slight fullness for even tooth wear and level cutting under normal filing pressures. (D) Tooth radius is designed to keep at least two teeth in contact with the work along any one line, to eliminate chatter. Greater shear angle at edges results in smooth cutting with less pressure, less clogging. (E) Preforged tang (in Rigid tanged type) has teeth stopped off to leave a clean shoulder *below level of teeth-tops*—insuring strength and allowing file to be used as a surfacing tool.



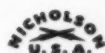
RIGID AND FLEXIBLE TYPES. Besides the Flat tanged shape, RIGID Nicholson Superior Curved Tooth Files come in Half Round, Half Oval, Pillar and Square tanged shapes; Half Round Shell (teeth on convex side only) and Half Round Moulding (teeth on concave side only) — both with holes, instead of tang, for use in rigid-file holder. FLEXIBLE type comes in the Flat shape only — with holes for use in flexible-file holders. At left is shown the newest Nicholson holder design — made of lightweight aluminum with improved turnbuckle adjustment for using file on either concave or convex surfaces of varying degrees. Obtainable through industrial distributors.



Nicholson Superior No. 25 Adjustable
Flexible File Holder

Nicholson makes special-purpose files for Brass, Lead, Aluminum, Stainless Steel, Foundry Castings, Die Castings, Die Making, Lathe Filing, Curved and Shear Tooth Filing—and Swiss Pattern files of all shapes and sizes.

FREE BOOK, "FILE PHILOSOPHY"
— 48 instructive pages on kinds,
use and care of files. Your fore-
men need it.



NICHOLSON FILE CO., 28 Acorn Street, Providence 1, Rhode Island
(In Canada, Port Hope, Ont.)



NICHOLSON FILES FOR EVERY PURPOSE



(Continued from page 14)

Catalog A-1 on AN connectors and fittings is announced. Its 76 pages present a wide assortment of Army-Navy electrical connectors presented in a well arranged simplified manner; AN fittings are presented with information required to make a selection and are indexed in numerical sequence for easy reference, dimensions and functional diagrams.

25. VALVES, STRAINERS—Automatic pressure reducing valves, strainers, hot water heat controls, relief valves, etc. are the subject of Catalog D-14 just issued by the A. W. Cash Valve Manufacturing Corp.

26. SOUND EQUIPMENT—New 84-page illustrated Sound Products Catalog, listing the company's complete line of sound equipment has just been issued by the Sound Products Section, Engineering Products Department, Radio Corporation of America.

27. SILENT GEARS—"Celoron Silent Gears" is the title of new catalog No. CG41, issued by Continental Fibre Co. Celoron is a high-strength, non-metallic thermosetting plastic product. It has tensile strength of 10,000 lbs. psi, flexural strength, 20,000 lbs. psi; compressive strength 38,000 lbs. psi; modulus of elasticity, 1,500,000; coefficient of expansion .000017 per deg. F.; Brinell hardness approximately 38. It is made in standard size sheets or die formed blanks, or molded blanks.

28. COPPER BASE ALLOYS—Series of technical bulletins describes five copper base alloys for electrical and mechanical applications other than resistance welding, products of Fansteel Metallurgical Corp., which are available in bars, rods, slabs, sheet, coiled strip and fabricated parts. The metals have greater strength, resistance to deformation and wear, and higher elasticity than copper, brass or the common bronzes.

29. GRINDERS—New catalog, 32 pages, contains specification data and descriptions of the Thompson Grinder Company's hydraulic surface grinders and other machines. It gives information on crush form grinding, and case histories of Truforming.

30. SOCKET SCREWS—36-page socket screw catalog No. 854 describing hex and multiple spline socket screws has just been published by the Mill Supply Divn., The Bristol Co. Illustrations are accompanied by detailed data on sizes, dimensions, shipping weights and specifications.

31. SHEAVES—V-Belt Sheaves are the subject of catalog 419 which shows dimen-

sions, weights, costs and other data. American Gear & Mfg. Co.

32. MOTORS—Induction motors and generators designed specifically for electro-mechanical computing and control equipment and servo mechanisms in general, are the subject of new catalog issued by the Arma Corporation.

33. SILVER BABBIT—This lead-base alloy containing silver is being used for lining bearings operating under heavy pressures, high speeds and temperatures. It is suitable for use in diesel, steam, oil, gas and gasoline engines. It is also used in heavy machinery and electrical equipment. A brochure and engineering brief detailing physical properties and outlining procedures is available from the National Bearing Division of American Brake Shoe Co.

34. PLUG VALVES—Bulletin No. 91 describes corrosion-resistant plug valves produced by Ampco Metal, Inc. The valve is aluminum bronze throughout. There is no galling or sticking, no rust, no surface formation of copper salts.

35. GRINDING WHEELS—The United States Rubber Co. offers 28-page catalog and price list covering high-speed grinding wheels. It gives detailed information on the company's resin-bonded grinding wheels and its vulcanite and corvite rubber-bonded wheels.

36. PERMANENT MAGNETS—Four-page booklet CDM-16 tells about G-E permanent magnet sub-assemblies, how they eliminate assembly line rejects, the high cost of test equipment, breaking and chipping losses, and the expense of shipping semi-finished magnets. Chemical Dept., General Electric Co.

37. PERMANENT MAGNETS—Bulletin CDM-12, 8 pages, describes G-E metallurgical products, describing and illustrating G-E cast and sintered Alnico, Cunife, Cunico, Vectolite, Silmanal, and various permanent magnet holding assemblies. Special alloys such as G-E Thermistors and G-E Hevimet are also discussed. Chemical Department, General Electric Co.

38. STAINLESS STEEL—8-page bulletin No. 112 tells about high alloy low carbon austenitic stainless steel known as Durimet 20 which is said to be superior to standard 18-8 stainless steel analyses for certain corrosive services, especially in the handling of sulphuric acid. It is recommended for use with about 125 corrosive solutions. The Duriron Co., Inc.

39. BUSHING STOCK—Standard stock guide for purchasers of bushing bronze is offered by Shenango-Penn Mold Co. It is printed in two colors on cardboard stock, and is center-scored for filing, or may be used as a wall chart.

40. DRILL JIG BUSHINGS—Drill jig bushings, A. S. A. Standard, are the subject of catalog No. 446. Accurate Bushing Co.

41. DIE SETS—Microlex anti-friction precision die sets and companion equipment, claimed to insure uninterrupted production, lowered costs, longer die life and better stampings, are the subject of catalog issued by Evans Reamer & Machine Co.

42. PNEUMATIC TOOLS—Pneumatic tools for industry are the subject of Catalog No. 46, 36 pages. These include grinders, wire wheel brush tools, drills, screw drivers, nut setters, impact wrenches, sanders, polishers, etc. The Aro Equipment Corp.

43. AIR TOOLS—"How to Cut Costs with Rotor Air Tools" is the subject of Booklet No. 30-A covering grinders, drills, sanders, nut setters, etc., issued by the Rotor Tool Co.

44. CARBIDE CUTTING TOOLS—Catalog No. 30 (40 pages) describes standard carbide cutting tools and blanks—special tips, tipped shell end mills, core drills and reamers, milling cutters, ring and plug gages, drawing dies, tool grinders, etc. Willey's Carbide Tool Co.

45. REAMERS—Adjustable Reamers for Industry, Machine and Hand Type, is the title of Catalog El-22 issued by Evans Reamer & Machine Co.

46. GRINDERS—Bulletin A-23 covers tool-maker grinders, surface grinders, chip-breaker grinder, tool and cutter grinder, carbide tool grinder and various industrial grinders. Delta Manufacturing Divn., Rockwell Manufacturing Co.

47. DIESEL ENGINES—"Hercules Diesel Engines—General Information"—That is the title of 28-page, illustrated informative book published by the Hercules Motors Corp. It gives a broad review of Diesel engine design and development.

48. FLOW METERS—Ring Balance mechanical flow meters, Series 2200-2600, are described and illustrated in detail in 12-page bulletin No. 2M48, issued by the Hagan Corp.

49. AUTO. BUS, TRUCK CLEANING—Booklet entitled "How to Cut Automotive Cleaning Time and Costs" published by Turco Products contains suggestions as to methods, materials and equipment. Subjects covered include engine and chassis cleaning; rust and scale removal; body washing and care; preparation for painting, paint removal, and general shop and building maintenance.

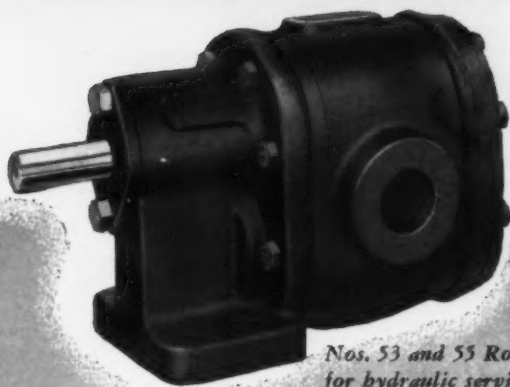
50. FLUORESCENT LIGHTING—Cold Cathode Fluoresce Lighting Guide, which explains the what, why, where and how of cold cathode is available from the Fluorescent Lighting Association.

51. GAUGES, INDICATORS—Catalog No. 57 covers micrometer dial gauges and micrometer dial indicators made by B. C. Ames Co.

(Please turn to page 19)

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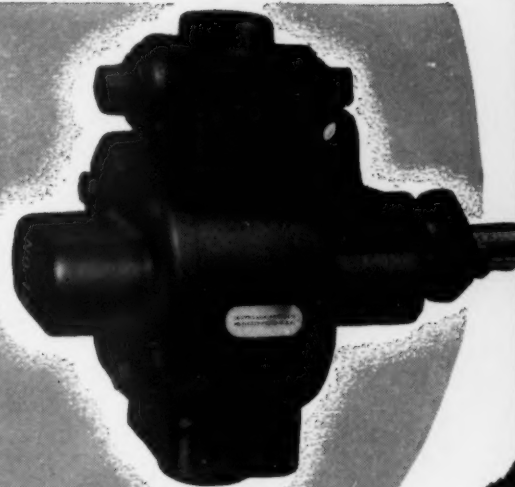


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(Continued from page 16)

☐ **52. COMBUSTION TESTS**—Complete line of combustion test sets made by F. W. Dwyer Mfg. Co. are described in bulletin No. 222.

☐ **53. PLASTICS**—Phenolic Molding Compounds—That is title of new 16-page booklet just released by Durez Plastics & Chemicals, Inc. It explains methods of molding, gives design and finishing information, and contains Physical Properties Chart showing values of various phenolic compounds.

☐ **54. DIAL SCALES**—Six new 3-color technical bulletins, 68 pages of data, diagrams, selection advice, and practical information on application of dial scales, are being released by the Yale & Towne Mfg. Co., Philadelphia Divn. Equipment includes counting scales, bench scales, portable platform scales, dormant platform scales, crane scales for use with cable or chain hoisting, and the weigh-can scale designed for the dairy industry. An entire chapter deals with "How to Select the Right Scale." Title of the set is "Yale Load King Scales."

☐ **55. PALLET LOADER**—Bulletin describes an unusual piece of equipment—the automatic pallet loader, stating that it palletizes 1200 to 1500 cases or cartons per hour, automatically cross ties to a predetermined pattern to form a stable interlocking load, and insures uniform stacks. Machine can handle different carton sizes and stacking patterns. Lamson Corporation.

☐ **56. METAL ROOFS**—"One Metal Roof—for the life of your building" is title of 24-page booklet published by International Nickel Co., Inc., which discusses causes and prevention of roof failures. It gives full data on a new soft-tempered Monel roofing sheet designed to overcome severe roofing conditions.

☐ **57. SOCKET SCREWS**—A folder No. DM860 containing interesting information on the application of multiple-spline and hex socket set and cap screws, has just been released by The Bristol Co., Mill Supply Divn.

☐ **58. TRADEMARKING, IDENTIFICATION**—Booklet presents quick picture of the diversity of use for the Kaumagaph Company's dry transfers, Prestomark labels, embossed seals and lithography for use on fabrics of all kinds, felts, pelts, plastics, rubber, leather, and other materials.

☐ **59. DIE-LESS DUPLICATING**—New edition of 40-page Di-Acro Catalog is announced by O'Neill-Irwin Mfg. Co. Describes equipment in detail and gives latest information on applications.

☐ **60. FRACTIONAL HP MOTORS**—Catalog No. 348, Fractional Horsepower For Industry, 34 pages, covers two basic types of motors made by the Electric Motor Corporation, Division of Howard Industries—motors with wound armatures and brushes, series wound for use on a-c and d-c, or shunt wound for d-c only; and shaded pole for use on 60-cycle a-c only. Catalog explains fundamentals of motors, speed reduction units, and the standard bases and accessories.

☐ **61. CHEMICAL PUMP**—New bulletin No. 488 describes Airometric chemical pump, just announced by the Milton Roy Co. It describes applications, contains capacity-pressure selection table, and flow sheets showing installation and automatic pH control diagrams.

☐ **62. INFRA-RED**—Chromalox electric radiant heaters for glassless infra-red drying, baking and heating where longer-wave infrared heat source is desired. Heating element is mounted in a rigid extruded aluminum body. Negligible amount of visible light is produced from the heating unit which operates at temperatures of 1000 to 1400 deg. F., depending upon wattage of heating element. Glassless construction permits unfiltered path of infrared radiation of the longer wave lengths. Edwin L. Wiegand Co.

☐ **63. CORROSION RESISTING ALLOYS**—New bulletin on nickel-molybdenum and nickel molybdenum-chromium alloys gives information on two alloys, Chlorimet 2 and

Chlorimet 3 for use for sulfuric acid, hydrochloric acid and salt solutions. Alloys are available in cast form. Pumps and valves are available in these alloys. The Duriron Co., Inc.

☐ **64. COUNTERSINKS, REAMERS**—Bulletin 16-C carries listing of chatterless countersinks, 3/16" dia. to 2" dia. in both the standard and heavy duty type groups, and describes ball seat reamers giving information on uses and other operating data. Bulletin also describes ball nose drills. Severance Tool Industries, Inc.

☐ **65. METALLIZING**—New catalog, 8 pages, of its complete line of metallizing equipment and supplies, is announced by Metallizing Engineering Co. It shows metallizing guns for every purpose, air and gas controls, spray booths and dust collectors, blast machines and nozzles.

☐ **66. PLASTICS**—A 15-page illustrated bulletin No. GDP 578, describing molded and laminated plastics has been issued by Plastics Division, Chemical Department, General Electric Co. It is devoted to a description of design, moldmaking and molding facilities of the Plastics Division, and discusses sealing caps and sleeves, mycalex silicone rubber, and high frequency insulation. High and low pressure laminated are summarized along with silent gears, bearings, decorative surfaces, translucent sheets and name plate materials.

☐ **67. LIQUOR PUMPS**—Bulletin #245 recently released by Warren Steam Pump Co. fully illustrates and describes line of Types L, LS and A liquor pumps for the process industries. These centrifugal pumps have a wide range of applications which include pumping of hot or cold erosive or corrosive liquids.

☐ **68. LABORATORY SHAKERS**—Bulletin describes utility shakers and flask shakers for the laboratory. Eberbach & Son Co.

☐ **69. MATERIALS HANDLING**—Bulletin describes 120-inch telescopic Worksaver announced by the Materials Handling Divn. of the Yale & Towne Mfg. Co. It is a tilting fork power truck, termed the highest-lifting "walkie" available; capacity 3000 lbs. Battery powered, the truck is guided by walking operator.

☐ **70. CENTRALIZED LUBRICATION**—New catalog presents Alemite's four basic systems of centralized lubrication. A spread shows phantom views of the four systems—Lubrometer, Midget Lubrometer, Dual Progressive and Dual Manifold, in as many

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(Continued from page 19)

typical machine installations. Alemite, Divn. of Stewart-Warner Corp.

71. CHLORINATED RUBBER—Revised edition of a technical booklet on Parlon, Hercules Powder Company's chlorinated rubber, gives information on the use of Parlon in protective coatings, printing inks, paper coatings, textile finishes, and various other applications. Parlon also is being used as a film-forming base for moisture vaporproof coatings for paper and paperboard.

72. GEAR TESTER—Ten-page folder describes various models of the Parkson Gear Tester in sizes ranging from 4½" to 36" capacity, and explains use of system in determining gear faults and errors. Information will be of practical interest to anyone buying, using, specifying or making gears. George Scherr Co.

73. GAS UNIT HEATERS—"Pittsburgh" gas unit heaters, Series C, featuring cast iron heat exchangers, are described in four-page bulletin. Specifications for six sizes, with output ranging from 172,000 to 68,000 AGA btu per hour, are included. Automatic Gas Equipment Co.

74. FASTENERS—New four-page bulletin illustrates some of the applications of the Simmons line of Quick-Lock, Spring Lock, and Lock-Nut fasteners. The Springlock is a one-piece blind fastener; it is also made of plastic material with steel inserts; the Quick-Lock is suited to widely divergent applications; and the Lock-Nut, which is also a stop nut, finds application wherever vibration is serious consideration. Simmons Fastener Corp.

75. REMOTE CONTROLS—Sperry hydraulic remote controls are the subject of 8-page bulletin released by Sperry Products Inc. Units are used for control of valves, machine feeds, throttles, governors, speeds and clutches of machine tools, diesel and gasoline engines, pumps, etc.

76. MOTOR LABELS—Hi-Heat resistant motor lead markers and motor connection

diagrams and rotation markers on heat resistant material that withstands heat up to 300 deg. F. continuously, are subject of catalog issued by W. H. Brady Co. Manufacturer states that labels will not curl, dry out or fall off. Labels bond permanently to wires, cover plates and motor frames. They are not affected by cold, moisture or vibration; 19 motor-hook-ups and 30 lead markers are available.

77. CLUTCHES—16-page, 2-color catalog, C11-48 is devoted to the Morse-Formsprag clutches which are available in all-purpose, indexing and plain bearing types. Applications include jet aircraft engines, press roll feeds, generators, blower fans, etc. Morse Chain Co.

78. CYLINDRICAL GRINDERS—Catalog F-48 covers the Landis tool type F series of hydraulic cylindrical grinding machines. This series consists of plain, gap and roll grinders, made to accommodate maximum work diameters of 14, 16, 20 or 24 inches in varying lengths up to 240 inches between centers. Landis Tool Co.

79. COLLETS—Catalog contains full information regarding the Balas Collet Manufacturing Company's line of automatic collets, pushers and pads, turret lathe collets and pads, and lathe and milling machine collets.

80. MOTORS—Bulletin 5033F, 6 pages, describes the Brown-Brockmeyer Company's Repulsion-Start Induction-Run Motors, 1/6 to 5 hp; capacitor-start induction-run motors in ratings from 1/6 to ¾ hp in sleeve and ball-bearing types; polyphase motors from 1/6 to 30 hp in open type, totally enclosed and explosion-proof; split-phase motors in sleeve-bearing type from 1/6 to ½ hp in four models; and others.

81. HARDFACING—A hardfacing booklet covering the complete new line of Airco hardfacing alloys, has been published by the Air Reduction Sales Co.; 16 pages, two-color, profusely illustrated, the booklet also serves as a hardfacing catalog describing Airco's new alloys in detail.

82. WATTHOUR METER—New meter, known as the I-150, and termed the first completely new watthour meter in 50 years, is subject of Bulletin GEC 350 just released by General Electric Co. It features magnetic suspension—a lifetime feature that eliminates "bearing" maintenance, and new damping system that neutralizes side thrust and minimized noise and vibration.

83. PLASTICS—Vinylite Resins and Plastics—their forms, properties and applications—are the subject of new booklet issued by Bakelite Corporation. You should have copy for your plastics file.

84. OPEN-TYPE SWITCHES—New 24-page catalog covers complete line of bakelite-enclosed and open blade type switches in wide variety of shapes, sizes and operating characteristics—included is thinnest switch made. The Acro Electric Co.

85. TABLETTING MACHINES—Catalog 48-T describes complete line of standard, special and auxiliary tableting machinery and equipment, made by the F. J. Stokes Machine Co. The 27 standard presses include cam, eccentric, rotary and toggle type machines with pressures ranging from one-half to 300 tons.

86. COPPER-Base Casting Alloys—That is the title of 52-page booklet issued by Federated Metals Divn., American Smelting & Refining Co. which details the 27 Federated copper-base specifications. The text, including introduction, "Metallurgical considerations", and chapter on properties of copper-base casting alloys, is of especial interest.

87. LATHES—36-page catalog gives comprehensive presentation of the Monarch Machine Tool Company's Series 60 engine and toolmakers lathes and special accessories for these units. Lathes are available in 14", 16", 18" and 20" swings, in variety of lengths.

88. MATERIALS HANDLING—Load Dispatcher is the name of versatile, easy to handle material handling unit described in bulletin issued by the Schwitzer-Cummins Co. It is made in hydraulic lift and fixed platform types, as a pallet transporter and as a tractor. Power is supplied by single cylinder air-cooled gasoline engine rated at 2 hp. Power section combines motor, drive-wheel, and steering wheel. Single lever controls operation.

89. CHUCKS—Catalog C-47, 36 pages, illustrates and describes in detail the standard line of Whiton Lathe Chucks, which comprises 3 types—-independent, geared scroll and geared scroll combination chucks. The Whiton Machine Co.

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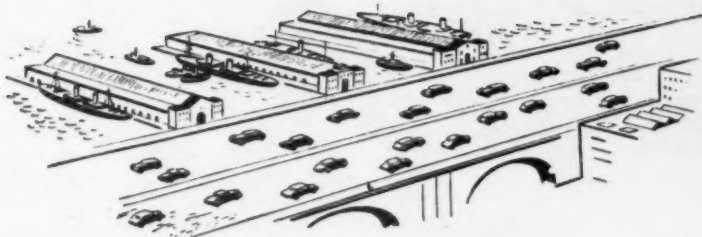
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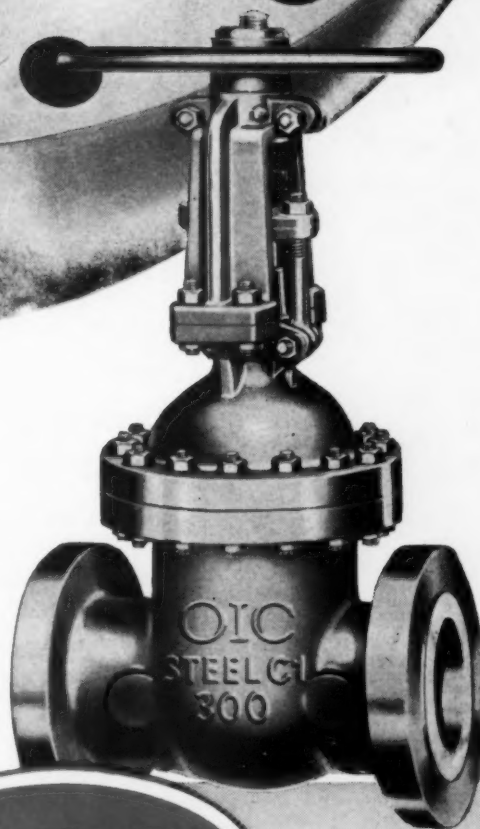
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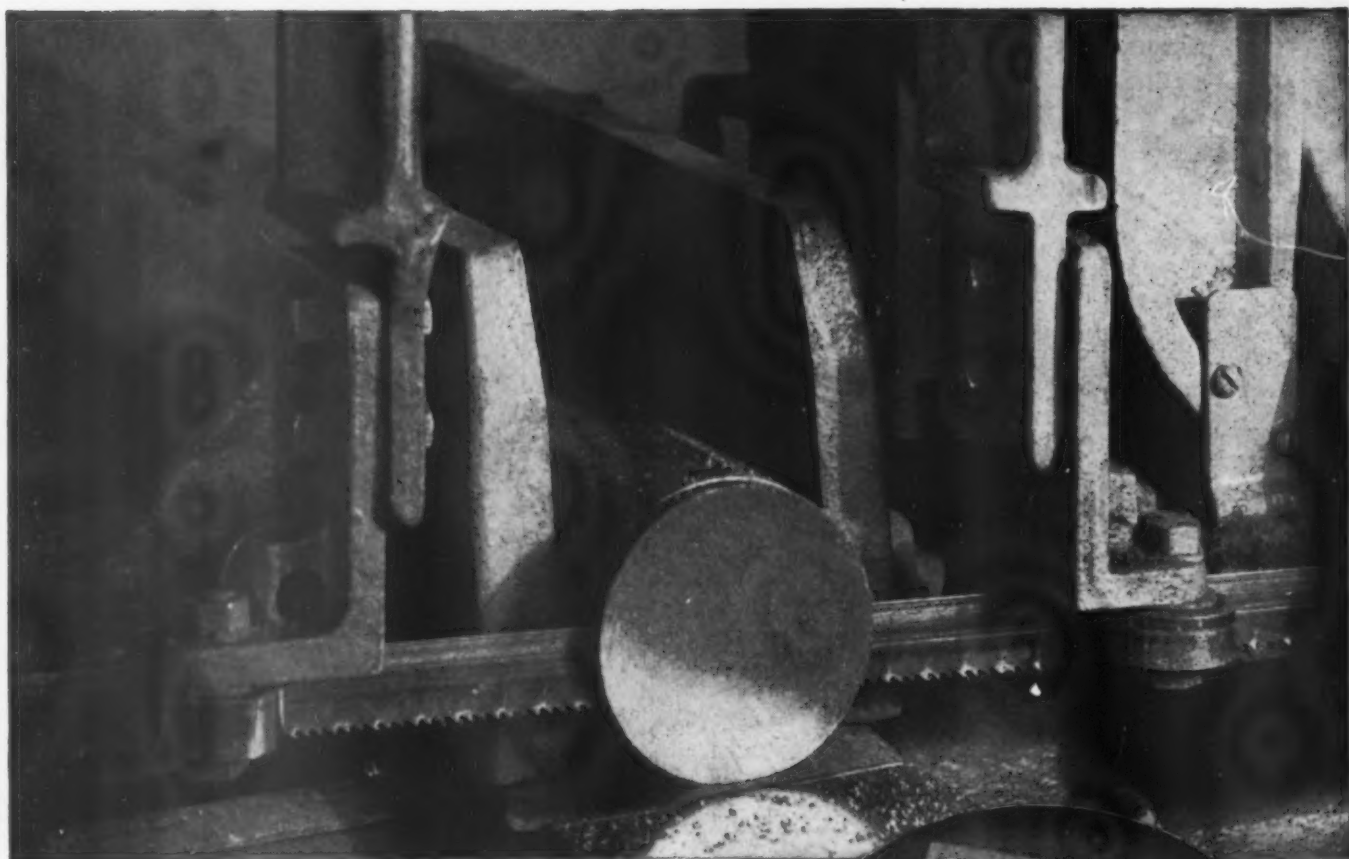


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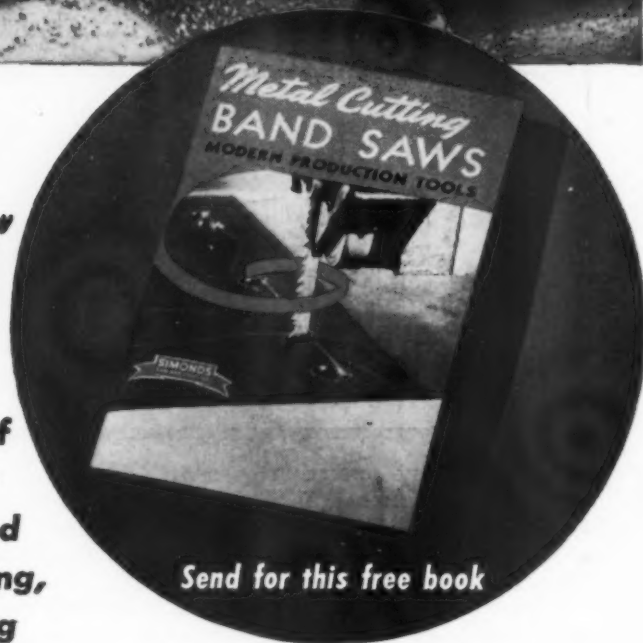


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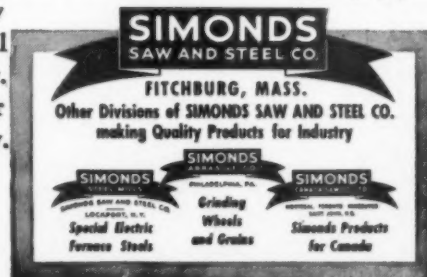
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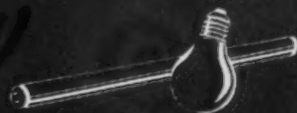
BRANCH OFFICES: 1350 Columbia Road, Boston 27, Mass.; 127 S. Green St., Chicago 7, Ill.; 416 W. Eighth St., Los Angeles 14, Calif.; 228 First St., San Francisco 5, Calif.; 311 S. W. First Ave., Portland 4, Ore.; 31 W. Trent Ave., Spokane 8, Washington. **Canadian Factory:** 595 St. Remi St., Montreal 30, Que.



And Simonds Metal Bands earn top profits on these jobs because they're made to *stay* on the job many hours longer . . . running smoothly, easily, cleanly. Simonds special steel, perfect tooth-milling and even tooth-set . . . those are the Simonds *extras* that *pay you extra* on every Simonds Metal Band you buy. Order from your distributor today.

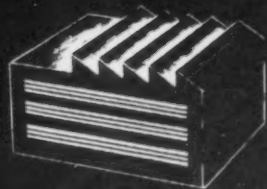


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THAT WESTINGHOUSE LAMPS ARE
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We're proud of the top-notch distributors who handle our products. They know lamps from A to Z —and they realize that customers like you deserve the best kind of personal sales attention. So we're not bragging about ourselves when we say: "Buy from your Westinghouse Lamp Distributor* and you'll get the best lamps money can buy . . . and you'll never do business with nicer people." Lamp Division, Westinghouse Electric Corp., Bloomfield, New Jersey.



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YOU CAN BE SURE...IF IT'S
Westinghouse
THE NAME YOU KNOW IN *Lamps*

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it's MORE COMFORTABLE

it's RUGGED



AO 5X264

Heavy Duty Glove

Feel it, test it, wear it and you'll see why this latest addition to the AO steel stapled line is ideal for handling small castings, rough stock, grinding and similar work.

Made of specially treated chrome tanned cowhide leather for long wear, the glove features a canvas back with elastic strap to overcome hand fatigue while providing a cooler feeling and snug fit.

All seams are steel sewed and the seam along the forefinger has been eliminated for longer glove life and added comfort at this vulnerable point.

Wearing surface of the palm has also been increased by extending the palm — no bib patch — another comfort feature.

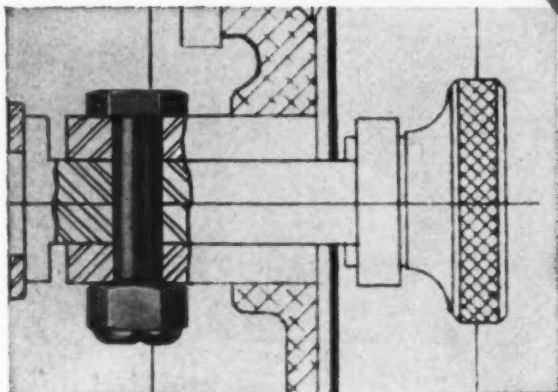
The steel stapled strap at the thumb crotch fortifies one of the weakest parts of a glove. There is a steel stapled patch on face of thumb and a short cufflex cuff with tape binding.

You'll lower your glove costs with the 5X264 — ask your AO Safety Representative or inquire at your nearest AO Branch Office.

American  Optical
COMPANY
Safety Division

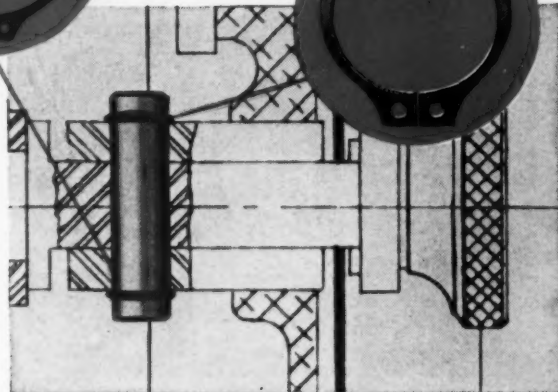
SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

Truarc saves 5 minutes, 9 cents in materials per unit without re-design of electric sanders



OLD WAY

Special 1/4" cap screw and 1/4-28 fibre-insert nut holds idler arm and pulley assembly on Model A3 "Take-About" Sander, Porter-Cable Machine Company.



NEW WAY

Simple 1/4" C.R. shaft, grooved in automatic screw machine, equipped with Waldes Truarc Retaining Rings. Bowed external ring (#5101-25) at top exerts resilient pressure taken up by Standard external ring (#5100-25) at bottom. Assembly is secure against vibration, can be easily taken apart and re-installed many times with same Truarc rings.

Every sander through the production lines costs 9 cents less for materials, requires 5 minutes less labor—with just the simple change from cap screw and nut to Waldes Truarc rings by Porter-Cable Machine Company, Syracuse, New York. The change to Truarc required no new design, no alterations in castings, but just the reappraisal of old methods.

Truarc can help you cut costs and increase produc-

tion, too. Wherever you use machined shoulders, nuts, bolts, snap rings, cotter pins—there's a Truarc ring that does a better job of holding parts together. All Waldes Truarc Retaining Rings are precision engineered, remain always circular to give a never-failing grip.

Send us your drawings. Waldes Truarc engineers will be glad to show how Truarc can help you.

See us at the Power Show, Grand Central Palace, N. Y.
November 29—December 4, Booths 522-523



WALDES
TRUARC

REG. U. S. PAT. OFF.

RETAINING RINGS

WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK

WALDES TRUARC RETAINING RINGS ARE PROTECTED BY U. S. PATS. 2,302,948; 2,026,454; 2,416,852 AND OTHER PATS. PEND.



Waldes Kohinoor, Inc., 47-10 Austel Place P-11
Long Island City 1, N. Y.

Please send 28-page Data Book on Waldes Truarc Retaining Rings.

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Company _____

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- The Pittsburgh line is a *complete* line of industrial brushes. Mill and

counter brushes, whitewash and calamine brushes! Roof and window brushes! Yes, and dozens more, too!

- Pittsburgh has 144 branches strategically located to serve you without delay. Ask our experts to help you select the *right* brush today.

Staple-Set Brushes. Dept. M-3, Baltimore 29, Md.



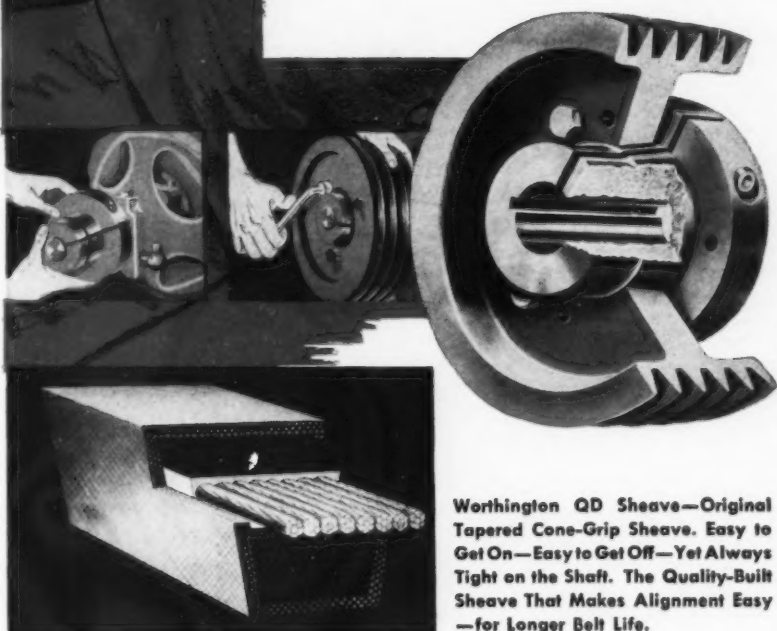
Staple-Set BRUSHES

BRUSHES • PAINT • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

THE GOOD RIGHT HAND OF INDUSTRY

No greater grip upon the shaft



Worthington QD Sheave—Original Tapered Cone-Grip Sheave. Easy to Get On—Easy to Get Off—Yet Always Tight on the Shaft. The Quality-Built Sheave That Makes Alignment Easy—for Longer Belt Life.

WORTHINGTON



The Good Right Hand of Industry

PUMPS: centrifugal, power, rotary, steam
COMPRESSORS: horizontal, radial, vertical
POWER TRANSMISSION: sheaves, V-belts, variable speed drives



The original tapered cone-grip of the two-piece QD Sheave produces a tighter fit on the shaft *than any other sheave.*

The tapered-bore rim, pulled up on the tapered-cone hub, causes a cone friction grip of rim on hub; and, in turn, a positive press fit on the shaft.

Yet no sheave is as easy to put on and get off. Positioning the hub first saves juggling a heavy rim—the rim slides easily over the hub and is pulled up by the full-sized bolts. The same bolts are used as jack screws to loosen the rim for dismounting—and the hub stays put in permanent adjustment.

For Balanced Drive Performance

Specify Worthington Multi-V-Drives, with QD Sheaves and Worthington-Goodyear EC V-Belts. Each strand in the belt carries its equal share of the belt load, as each belt carries its full share of the drive load. (Goodyear EC Cord or Steel Cable V-Belts are used exclusively in Worthington Multi-V-Drives.)

Complete Range of Stock Sizes— Prompt Shipment

853 listed stock sizes in "A", "B", "C", and "D" sections, fhp to 200 hp . . . 332 listed stock sizes of EC Cord V-belts. Send coupon for latest Worthington QD Sheave bulletin.

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Merchandising Division, Dept. M812A
Harrison, New Jersey

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Company.....

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Oil Foil



From the name you would guess that Oilfoil keeps oil in or out. Correct. But it not only acts as a positive seal. It also is a storage reservoir for oil, which bleeds out as required for bearing lubrication. Further, it is an impervious shield against water, dirt, other foreign matter.

How is this accomplished? An Oilfoil washer or seal is a sandwich of felt and Hycar, the synthetic elastomer that is especially resistant to hydrocarbons. The felt may be of the same type and density throughout, or different felts may be combined with one or more impervious septums, according to the requirements of the specific case. Oilfoil Seals or Washers are usually impregnated with oil, grease, graphite or other lubricants before assembly. Originally developed by us in 1921, these laminated felt seals are now being increasingly recognized as offering the ultimate in protection. Write for full information.

American Felt Company

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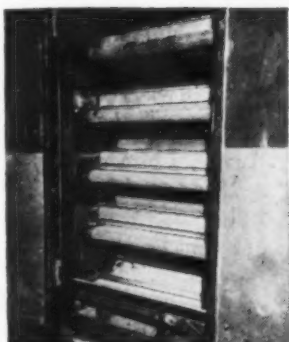


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INSURES ECONOMY OF DESIGN



The steaming machine pictured above demonstrates how the flexibility of Wissco friction drive belts makes possible a very compact installation. Wissco Conveyor Belts can be engineered to meet *your* exact needs.

BECAUSE WISSCO BELTS are woven of flattened wire spirals, they operate efficiently over small diameter pulleys. They lend themselves to equipment where lack of space precludes the use of large pulleys and can be custom-engineered to operate by chain or friction drive.

And Wissco Belts have the stamina and built-in toughness that insure maximum production at low cost regardless of operating conditions—white heat or subzero—abrasion—corroding chemicals or other grueling punishment.

Send today for our illustrated catalog showing types and advantages of numerous conveyor belt constructions.

WISSCO

METAL CONVEYOR BELTS

A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

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Sales Offices—Boston, Buffalo, Chattanooga, Chicago, Denver, New York • Pacific Coast Subsidiary—The California Wire Cloth Corp., Oakland 6, Cal.



If Your Product Uses

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ALUMINUM

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COLGATE

Can Fit Into Your Picture
in any of these 9 ways...

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TOOLING

STAMPING

DRAWING

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Here are completely integrated facilities for fabricating sheet metal—from planning through packaging of finished product—all available in one organization, one responsibility. As specialists in the working of the light metals, Colgate craftsmen have acquired experience that pays off in faster service and lower cost all along the line: designing, tooling, fabricating, assembling.

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Whether your requirement is for a single part, a sub-assembly, or a complete product—you will find Colgate geared to your needs in making it.

Our engineers and tool designers will be glad to work closely with your staff.

Detailed Technical Data on the facilities available at the Colgate plants are given in this illustrated brochure. It also explains the extensive Colgate services—suggests ways in which they can prove of value to you.



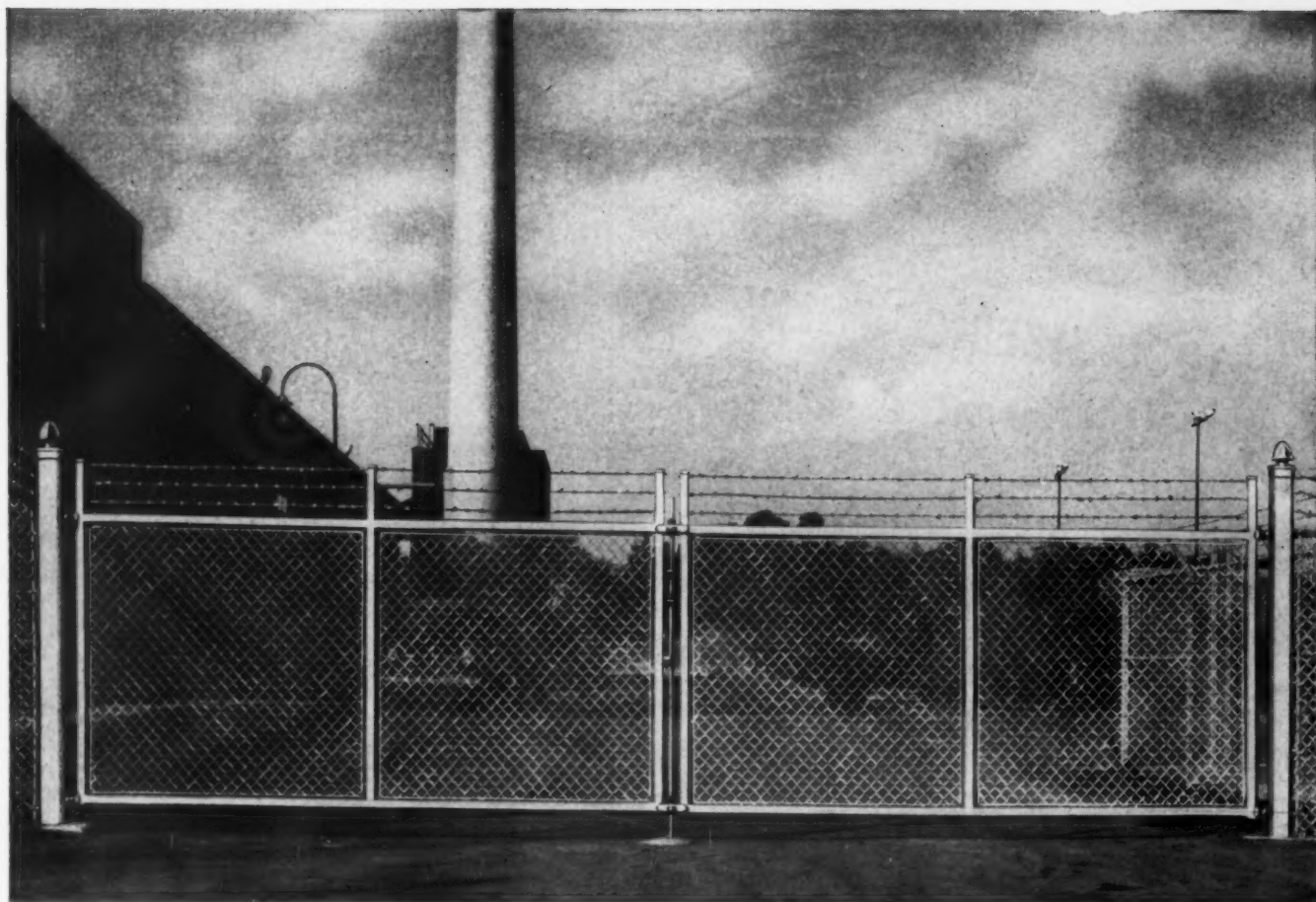
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Manufacturing Corporation

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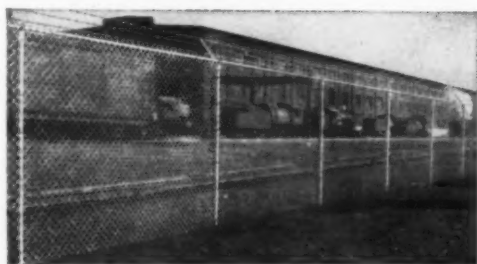
AMITYVILLE, LONG ISLAND, NEW YORK

FABRICATORS OF LIGHT METALS: ALUMINUM, MAGNESIUM, STAINLESS STEEL



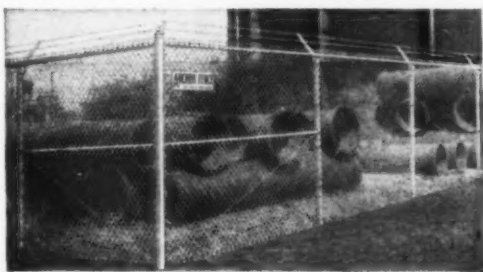
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CONTROL over PLANT TRAFFIC!



Protects Your Plant Against Snoopers

Installing an Anchor Chain Link Fence at your plant is the best way to shut out trespassers, agitators, all kinds of troublemakers.



Protects Outdoor Storage of Materials & Supplies

Anchor Fence helps you make full use of outdoor space with utmost safety, frees factory space, makes it unnecessary to build at this time.

Anchor Chain Link Fence and Gates are the simple, effective way to get smoother control over all your shipping and receiving operations. Like a traffic cop, an Anchor installation will help you handle the flow of motor traffic and employees in and out of your plant with maximum efficiency. And trained Anchor Fence engineers, experienced in many industrial installations, will install your fence where it will do the most good!

In addition, sturdy Anchor Fence also safeguards outdoor storage of materials and protects your plant against troublemakers. And you'll get extra life and greater protection because of several time-tested, *exclusive* features, like *Deep-Driven Anchors* . . . which hold the fence erect and in line, in any soil, in any weather. Look in your phone book now and call a trained Anchor Fence engineer. He'll be glad to help you discuss your needs, without obligation. Or write for our illustrated folder to: ANCHOR POST FENCE DIVISION, Anchor Post Products, Inc., 6615 Eastern Ave., Baltimore 24, Maryland.

Anchor Fence

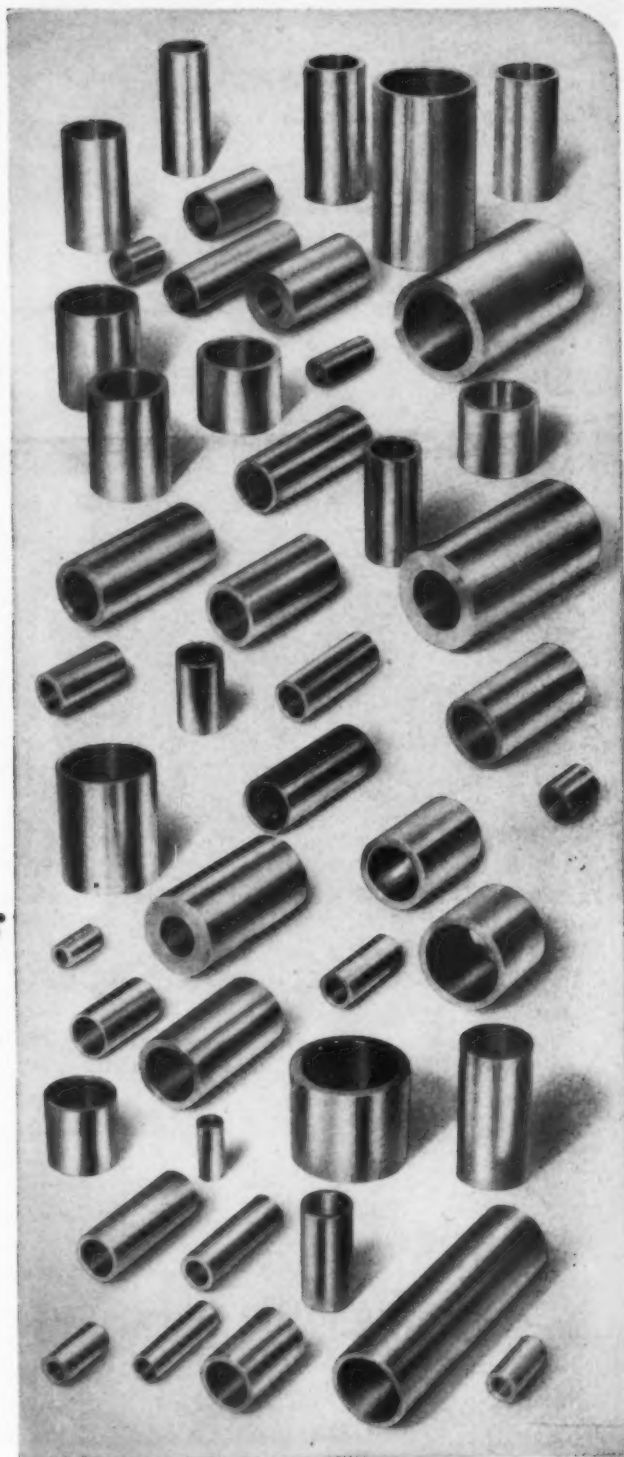
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1088 SIZES OF FULLY
FINISHED, READY-TO-USE

BUCKEYE BEARINGS

*Carried by Leading Distributors
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● Leading supply houses carry Buckeye Bearings to serve you better. Manufactured from selected materials under our rigid laboratory and metallurgical controls of charging ratios and melting and pouring temperatures, Buckeye Bearings meet the most exacting specifications. Each is a quality product—free from porosity and accurately dimensioned within the required limits assuring speedy, easy assembly and a maximum of long, efficient, satisfactory service. Send for the Buckeye catalog, and order Buckeye quality bearings—by name and number—from the stocks that are carried by your Buckeye distributor.



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BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT
IN ANY RECOGNIZED BEARING METAL ANALYSIS

Save seconds at every turn...



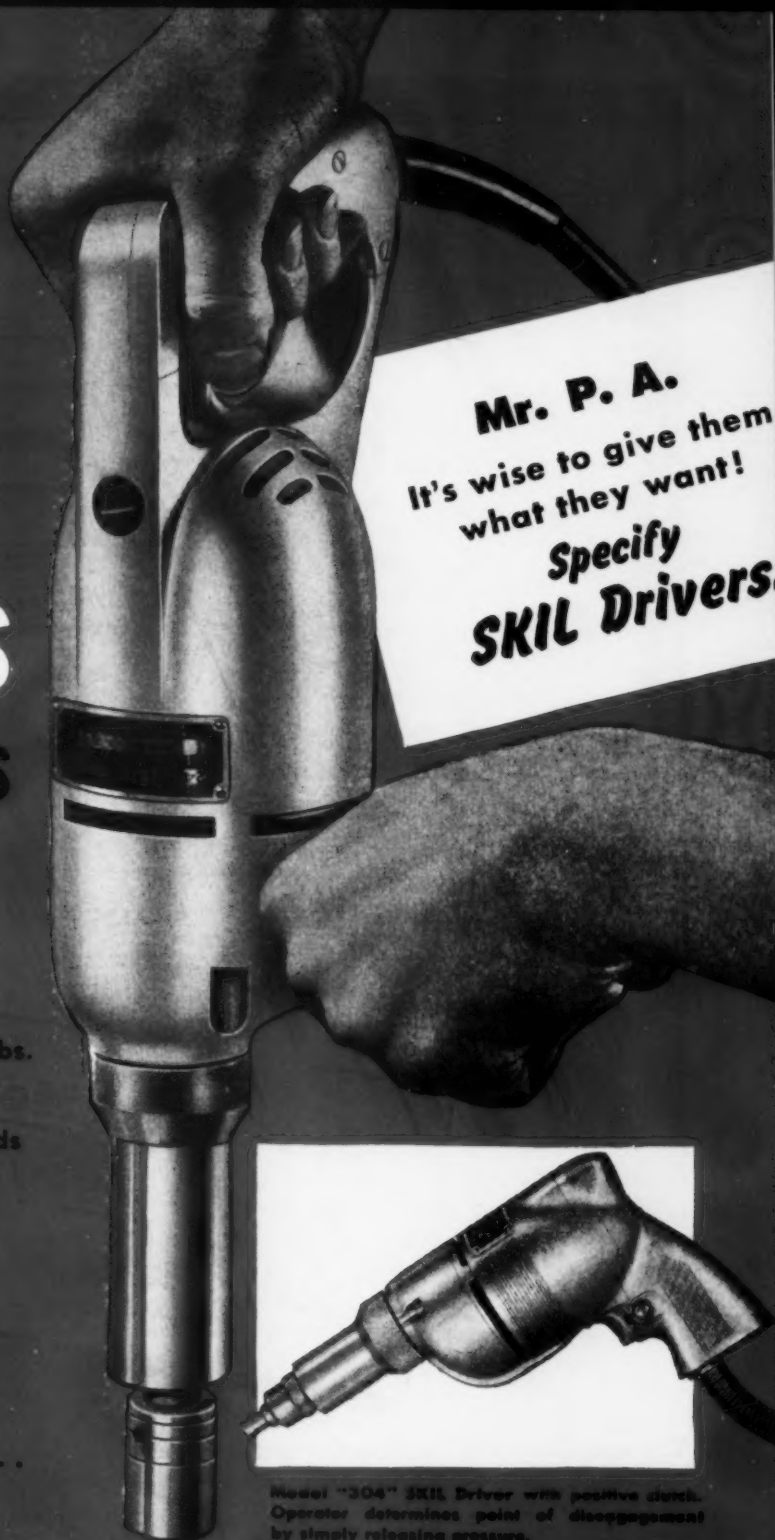
Put **SKIL Drivers** to work driving screws and running nuts!

Here's how to tell whether SKIL Drivers will really pay for themselves on your assembly jobs. Figure how many nuts must be run . . . how many screws must be driven. Then multiply by the seconds you'll save on every one when SKIL Drivers take over. You'll find you're figuring in hours and dollars before you know it.

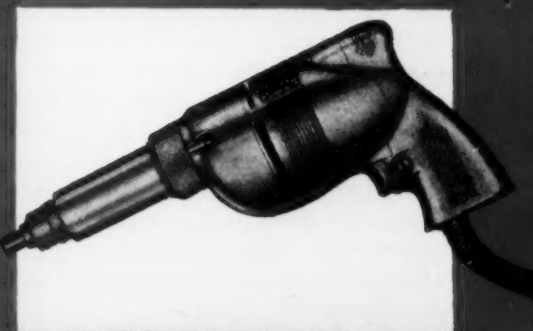
SKIL Drivers bring you these big savings because they're extra fast. They're small and compact for use in tight corners . . . lighter and more perfectly balanced for easiest handling . . . and sturdily built for all your jobs. Ask your SKIL Tool Distributor for a demonstration today!

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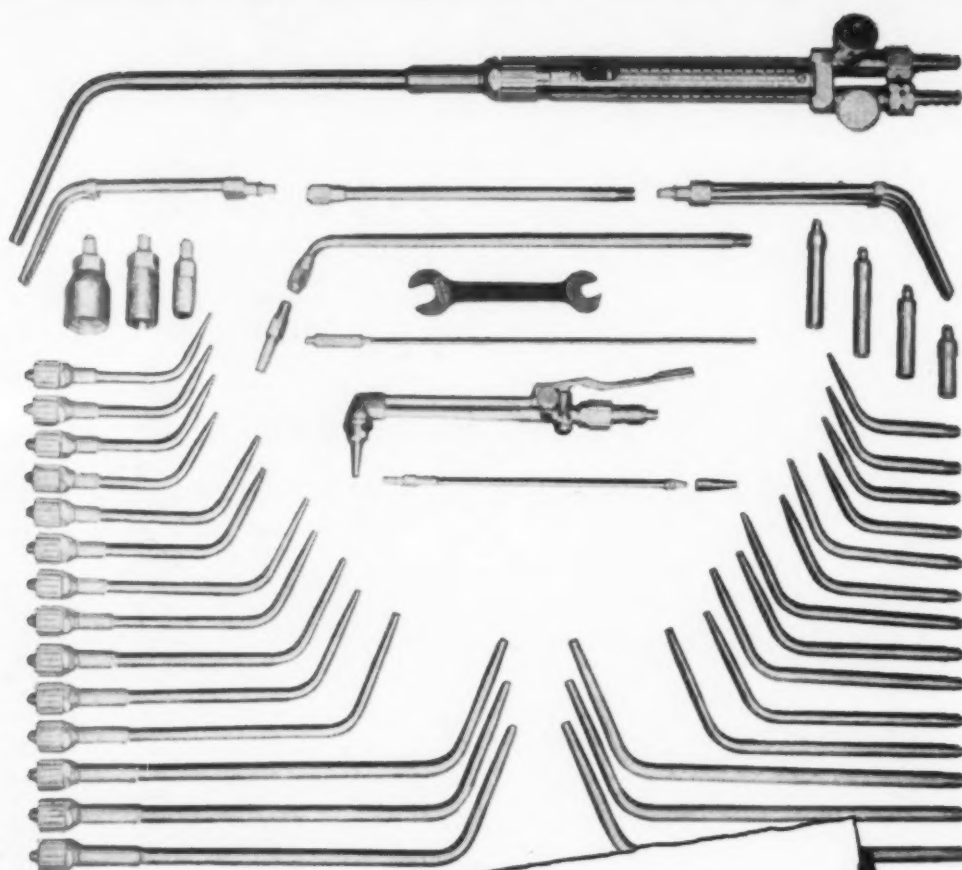
SKIL TRADE-MARK **Tools**
ELECTRIC
PNEUMATIC



Model "304" SKIL Driver with positive clutch. Operator determines point of disengagement by simply releasing pressure.



Model "303" SKIL Driver has adjustable clutch that disengages on predetermined torque. Tension easily adjustable in seconds.



Here is Airco's **New** Torch for
Heavy Duty welding...
 heating... brazing

The new Airco 800 Torch is designed for tough, *heavy-duty* jobs. As shown in the illustration, the torch operates with a complete range of welding tips (with or without individual mixers) as well as heating, brazing and a variety of tips for other uses. No other torch can offer this wide operating range.

The torch head is of durable, long-wearing monel metal; thus fewer torch head replacements, and lower maintenance costs result. The general design of the new Airco 800, plus flexible 1/4" or 5/16" I.D. hose, assures perfect balance and ease of manipulation... lowered operator fatigue.



With the addition of a cutting attachment, the Airco 800 is easily converted to handle general shop cutting work.

If you would like more information about this torch, or a **FREE** demonstration right in your own shop, address Dept. PR-8471, Air Reduction, 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas. On West Coast: Air Reduction Pacific Company, San Francisco 4, California.



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Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories

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and in Boxes!



CONFIDENCE IN *Quality*
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THE WEIMARANER — a rare and selective breed of dog originated by the nobles in the Court of Weimar, Germany, more than 135 years ago. Marvelous all-around hunting dogs and retrievers.

YES, Union corrugated containers are pedigreed stock. They are made from 100% virgin Kraft, in the largest pulp-to-container plant in the world. Every production step is checked by a single management. And four modern box plants, strategically located, are ready to service rush orders.

Since 1872 Union has been a leader in engineering, designing, and producing paper packaging. Ten years

ago, Kraft container board was added to the line and in a short time Union became one of the nation's larger producers in this field, too.

Now Union container board is going into Union's own corrugated containers, identified by the famous Union shield. This shield on a corrugated container is a mark of *consistent* quality, *consistent* service, and *always* fair price.

UNION Corrugated Containers

UNION BAG & Paper Corporation

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What kind of heading wire



NEEED carbon . . . stainless . . . alloy heading wire? Wire for socket bolts? Nuts? Screws? Recessed-head screws? We make wire for them all. In fact we have been known as "Wire Headquarters" for the heading industry for many years. In that capacity, we have developed many types of wire which have contributed enormously to the progress of the heading industry. For example, many heading jobs that were formerly done hot can now be done cold—largely because we have helped to develop the right kind of wire.

But heading wire is only one of thousands of different types of wire we produce. Our U·S·S American Quality Wire has proved its merit in thousands of different manufacturing uses. Our unexcelled research and modern production facilities plus over a century of quality wire-manufacturing experience make it possible for us to draw wire for any application. At present the demand for our high quality wire products far exceeds the supply, but we are making every effort to satisfy our customers' requirements.

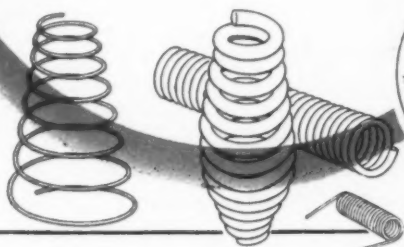
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do YOU need?

WHAT KIND OF SPRINGS DO YOU NEED?

Whether you use simple springs to flip women's compacts open gently or hot wound springs to cushion the surge of powerful locomotives, we can supply you. For we produce springs from round wire, shaped wire, flat wire or strip steel, from either pretempered, or formed-and-then-tempered, material. And whether your springs must perform under severe fluctuating stresses . . . in serious corrosive conditions or other unusual operating conditions, you can count on top performance. For the springs we produce are accurately tested to make certain that they will fit the application.



WHAT KIND OF COLD ROLLED STRIP DO YOU NEED?

U.S.S. American Cold Rolled Strip is produced in a wide range of analyses and tempers in carbon, stainless and alloy steel and with any standard edge you might need, in the established widths for the different edges. The three types of strip are produced in all commercial bright finishes. In addition, the carbon strip is furnished in either galvanized, tinned, coppered or special finish. Our low carbon strip is made in sizes from $2\frac{3}{16}$ " down to $\frac{1}{2}$ " wide in hard, half hard, quarter hard, soft skin-rolled and dead soft tempers. Tempered steels are made up to 7" wide in four different finishes; black, scaleless, polished, and polished and colored. While the demand for our strip steel far exceeds the supply, we are making every effort to satisfy our customers' needs with the best steel available.



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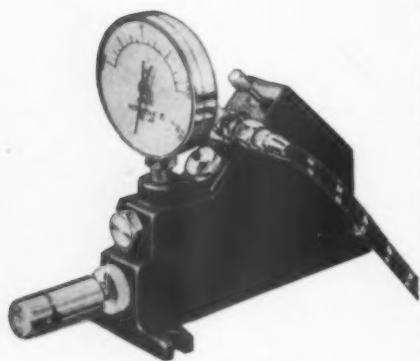
UNITED STATES STEEL



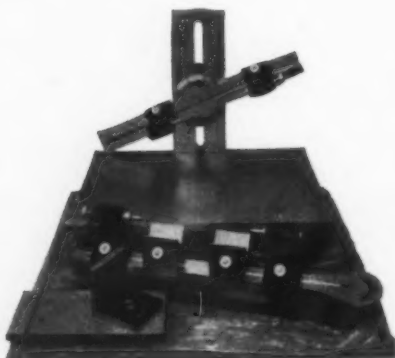
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for precision equipment
for every inspection need!

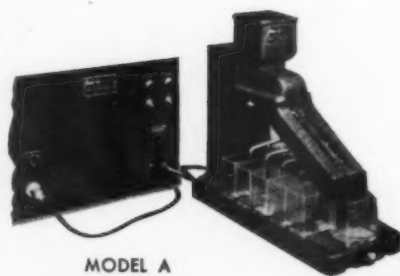
EXACTITUDE
STANDARD A.G.D. GAGES



VERSATILE—MODEL 30
NEW-MATIC MEASURING MACHINE



MASTER MODEL
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MODEL A
NEW-TRONIC
BALL SORTER



MODEL A-10
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MODEL B-10
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VIGILANT—MODEL 60
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MEASURING MACHINE

Whatever your inspection requirements, look with complete confidence to Merz precision measuring and checking machines. Every Merz product is a proved cost-cutter, a tested time-saver. The Merz line includes *New-Matic* Measuring Machines, *New-Tronic* Comparators and Gages, Checking Plates, Standard A.G.D. Gages. Merz also specializes in the custom-building of equipment for handling unusual

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*The House
That Precision Built*



This Head is askew



These Threads are eccentric



These Heads and Threads are true



Circle © Bolts and Nuts . . . both standard and special . . . are used in large volume by leading manufacturers of quality products. The dependability of these bolts has been tested time after time and proven in thousand of applications.

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North Tonawanda, N. Y.

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Export Sales Office: Buffalo International Corp.,
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...they are CIRCLE

(B) BOLTS

With rare exceptions on commercial and industrial installations

**Ordinary Fuses and Breakers
Do Not Protect
Except Against Short-Circuits
But —**

FUSETRON

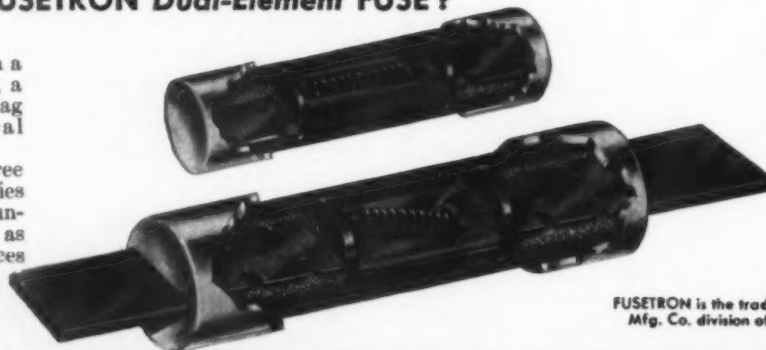
DUAL-ELEMENT FUSES

*Provide **10** Point
Protection -
Count 'em*

What is the FUSETRON Dual-Element FUSE?

A fuse link combined with a thermal cutout — the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

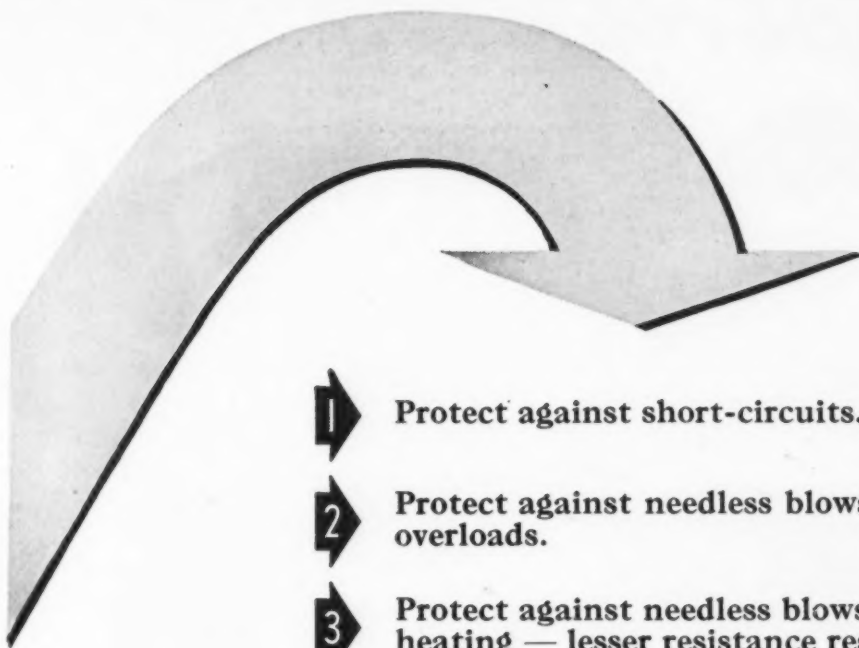


Made to the same dimensions as ordinary fuses — fit all standard fuse holders.

Obtainable in all sizes from 1/10 to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly low.

FUSETRON is the trade mark of the Bussmann Mfg. Co. division of McGraw Electric Co.



- 1 Protect against short-circuits.
- 2 Protect against needless blows caused by harmless overloads.
- 3 Protect against needless blows caused by excessive heating — lesser resistance results in cooler operation.
- 4 Provide thermal protection — for panels and switches against damage from heating due to poor contact.
- 5 Protect motors against burnout from overloading.
- 6 Protect motors against burnout due to single phasing.
- 7 Give DOUBLE burnout protection to large motors — without extra cost.
- 8 Make protection of small motors simple and inexpensive.
- 9 Protect against waste of space and money — permit use of proper size switches and panels.
- 10 Protect coils, transformers and solenoids against burnout.

FUSETRON

DUAL-ELEMENT FUSES

Give ALL-PURPOSE Protection

One needless shutdown — or one lost motor — or one destroyed switch or panel — may cost you far more than replacing every ordinary fuse with a FUSETRON dual-element fuse.

Don't risk such losses — protect yourself by installing a FUSETRON dual-element fuse in every set of fuse clips throughout the entire electrical system.

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• St. Louis 7, Mo. (Division McGraw Electric Co.) •
• Please send me complete facts about Fusetron •
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• Address _____ •
• City _____ State _____ 1148 •

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this man
can improve your
shipping methods**



Harassed by shipping losses . . . breakage, pilferage, customer complaints? Maybe it's time to call in a Signode packaging and shipping engineer.

In their years of experience—working with shippers of all kinds of products and commodities, in all sections of the country—these packaging specialists have met and solved thousands of knotty problems, many of them similar to yours.

Regardless of what, where or how you ship . . . or how much . . . a Signode representative will be glad to show you how you can save money, improve customer good will with *Signode's System of Planned Protection*. For further details, write today.

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SIGNODE SPECIAL LITHOGRAPHED SEALS

Illustration shows how your name and trade-mark can be lithographed on the seals you use—good advertising, good identification, good protection. Write for details.



NEW BOOKLET *Signode's "Answer Book"* with 24 pages of useful packaging and shipping information is available to you free. Write for your copy today.

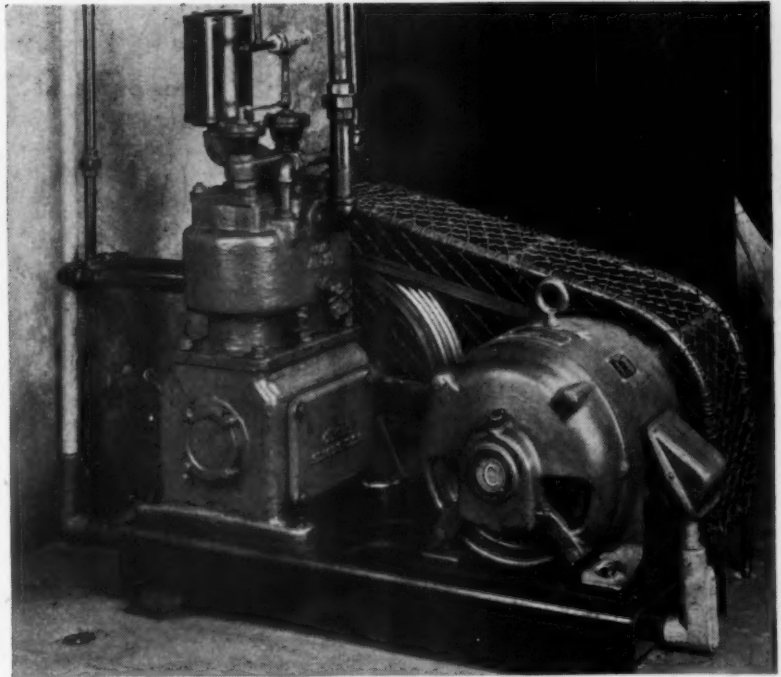
STEEL STRAPPING PROTECTS YOUR SHIPMENTS AGAINST DAMAGE

Curtis Timken Bearing Air Compressor. Sizes from 1/4 to 50 H. P., inclusive.

RELIABILITY
That Pays Off
in Low-Cost
Performance

CURTIS

TIMKEN BEARING AIR COMPRESSORS



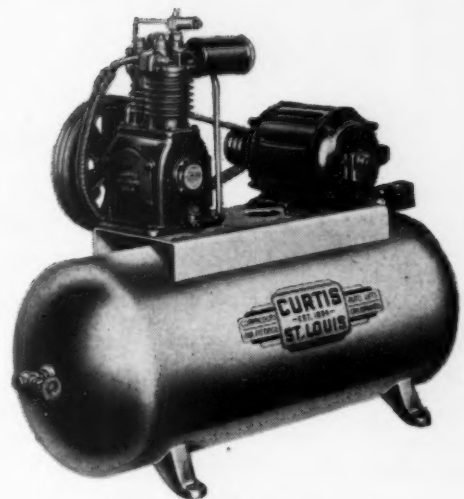
WHATEVER the application, in thousands of varied industrial installations, Curtis Timken Bearing Equipped Air Compressors have a long and proven record of extreme reliability, low maintenance expense and unusually long life.

Every Curtis Air Compressor has been carefully engineered, made of the highest quality materials and precision built throughout.

Their dependable, economical performance is the result of such design advantages as:

- Timken Roller Bearings
- Self-Oiling—Positive Lubrication
- Carbon-Free Disc Valves
- Automatic Pressure Unloader
- Fully Enclosed Design
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Specify CURTIS when you want a reliable, low-cost supply of air for *any* use. Capacities from 1/4 to 50 H.P. (up to 300 CFM).



Curtis Timken Bearing Air Compressor with tank. Sizes from 1/4 to 10 H.P., inclusive.

Write today for full information on Curtis Air Compressors, Air Hoists and Air Cylinders—or mail the coupon below.

I-48-1

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PNEUMATIC MACHINERY DIVISION

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CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company
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Please send me Form C-7 on Curtis Air Hoists, Air Cylinders and Curtis Air Compressors.

Name.....

Firm.....

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City..... Zone..... State.....

Tell it to our draft board..

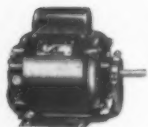


↑ Motor design starts on the drafting board, to predetermined requirements.

Sample motor, before shipment to customer, receives laboratory tests. ↓



and get uniform performance to fit your application,
with a motor that's *Twin-gineered*

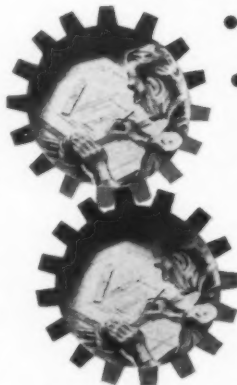


1/20 to 5 H.P.
AC and DC

Emerson-Electric's "draft board" is always in session... an efficient, smooth-gear organization, competently staffed and equipped to solve the design problems relating to power applications for motor-driven appliances.

The "draft board" is eager to collaborate with your engineers... to combine your knowledge of product design with our *know-how* acquired in 58 years of motor design, application, and manufacture. Such collaboration—*Twin-gineering*, we call it—is likely to save you much costly engineering "back-tracking" later, and may suggest manufacturing short cuts or improvements which will give your product added market advantages even beyond those assured by a trouble-free, soundly-engineered power application. There is no charge for Emerson-Electric design and planning services... your inquiry is invited on this first vital step in *Twin-gineering*... the successful system that *mesbes* engineering minds to produce better motors for the job at hand.

Here's how TWIN-GINEERING "follows through" to give you the perfect power application:



- **DESIGN SERVICE:** Our "draft board," in consultation with your own engineers, plans the best power application for your particular need.
- **PRODUCTION:** An Emerson-Electric Application Engineer, assigned to each project, personally directs the writing of specifications and performance requirements, from which production is planned.
- **QUALITY CONTROL:** Rigid testing of both materials and motors is carried out by inspectors in accordance with instructions established by the Application Engineer.
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- **FIELD LIAISON:** The Emerson-Electric Territorial Representative, provides direct liaison on all phases of the power application, from inception to final delivery and marketing of the product.

THE EMERSON ELECTRIC MFG. CO.
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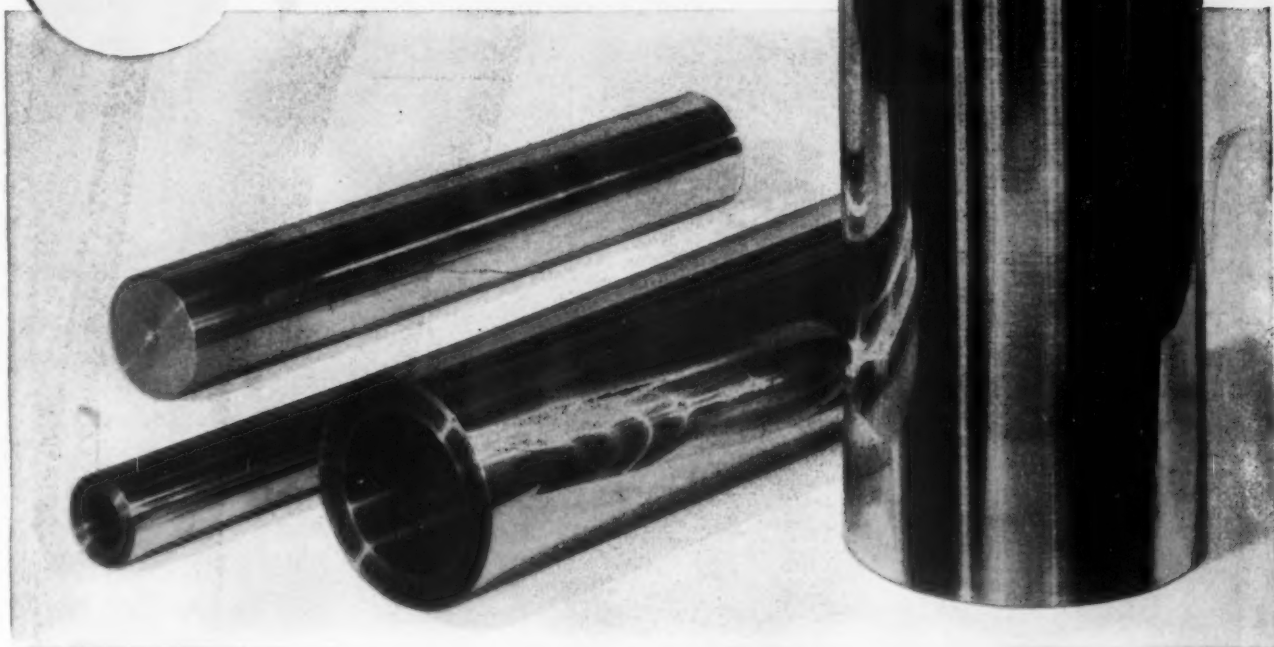


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MOTORS · FANS

APPLIANCES

New kind of bushing stock . . .
your key to new savings!



HERE'S WHY. Shenango-Penn tubular bushing stock is *different!* It's *centrifugally* cast! Now, in a complete range of stock sizes, ready for immediate delivery, Shenango-Penn bars offer you those *same* money-saving qualities that make Shenango-Penn a preferred source of supply for special bearings, bushings and sleeves that must withstand the toughest kinds of service.

ADVANTAGES. The Shenango-Penn *centrifugal* method produces pressure-dense bars having exceptionally fine grain, higher tensile

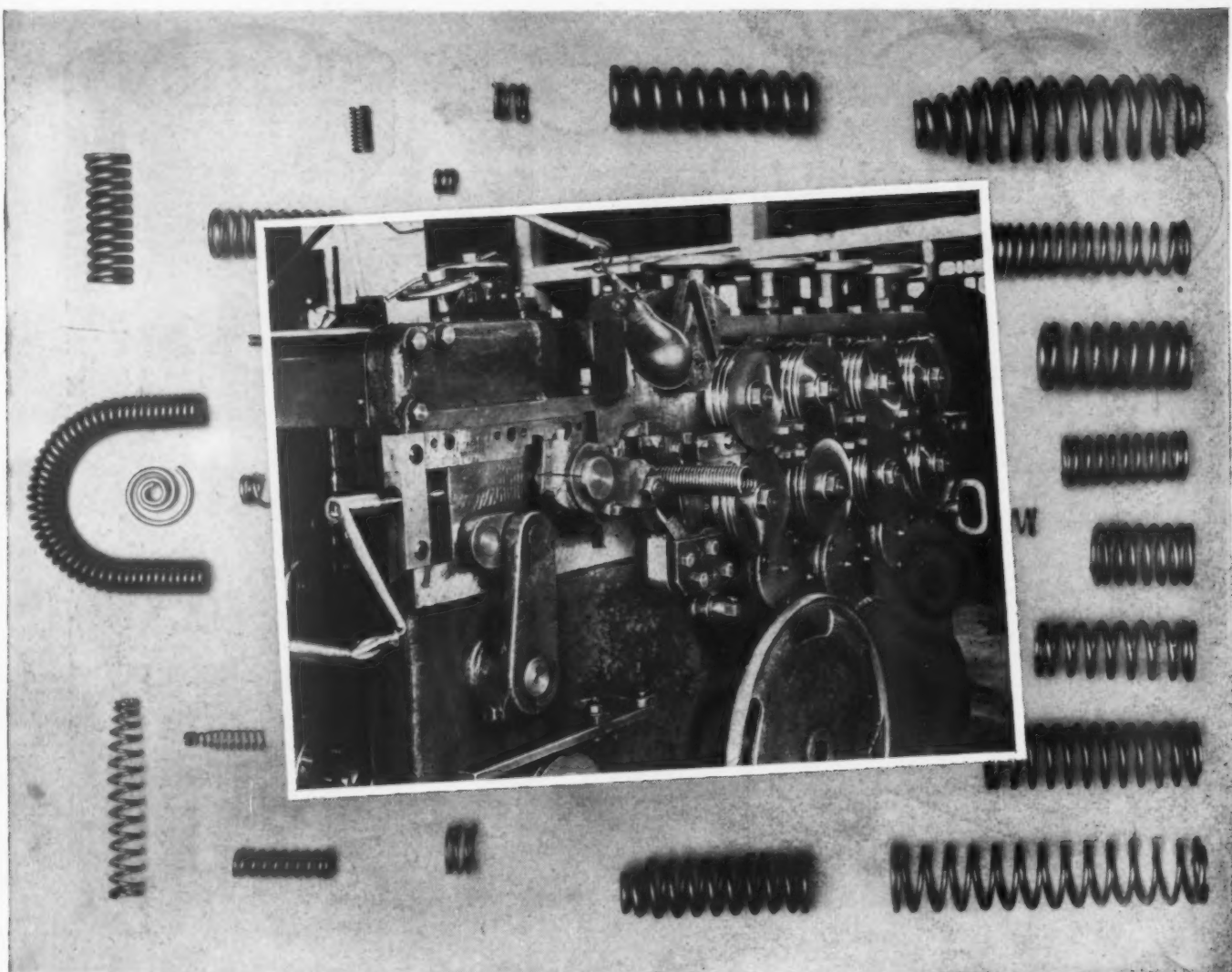
strength, finely divided and uniform lead dispersion, greater elongation, and *complete* relief from sand inclusions and blow holes. So naturally you can count on fewer rejects, excellent bearing load distribution, superior wear-life, and less chance of breakage or distortion in service.

FREE BULLETIN. Send for Bulletin No. 145 containing additional information and the complete list of standard, conveniently stocked sizes. These bars are ready now to give you that big *extra* margin of safety, service-life and over-all economy.



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HISTORICALLY SPEAKING

"LET THEM
EAT CAKE"*

GENERALLY SPEAKING

"the container is part of
the product"

... and a very important part indeed! Important because the proper containers... General Engineered Shipping Containers... assure positive protection and reduced packing and shipping costs.

And, here's why: they're compact—no space is wasted. They're lightweight yet extra strong—no materials are wasted! They're actually a "part of the product."

If you are faced with a packing problem, or if you would like to consider improving your present container, write us today. Our engineers will be glad to help you. Also send for your free copy of "The General Box."

*Marie Antoinette (1755-1793), Queen of France. When told that her suffering subjects had no bread, it is reported that she said: "Let them eat cake."

GENERAL BOX COMPANY...engineered shipping containers

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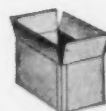
DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez. Continental Box Company, Inc.: Houston, Dallas.



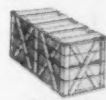
General Nailed Box



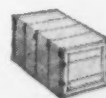
General Cleated Corrugated Container



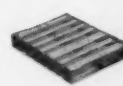
General Corrugated Box



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General Lift Pallet

Where perfect fit means perfect service...

Bristol socket screws are made to meet all accepted standards for tolerance. This means greater ease in installation — a snug fit with tighter grip — regardless of the number of times the screw must be removed and replaced. That's why Bristol Hex Socket Screws are the choice of men who demand dependable performance on the job.

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CRITICAL INSPECTION. The use of a special alloy and heat treatment of the finished product insure the proper balance of hardness and toughness to give great holding power and long service under severe conditions. This is backed up by a critical inspection system: physical testing of raw material... checking of tolerances during production... testing for hardness and ultimate strength... gauging for lead and pitch... plus visual inspection before packing.

FULL RANGE OF SIZES



"Hex" Cap Screws — No. 4 to 1"



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No. 4 to 1"



"Hex" Pipe Plugs
1/16" to 1 1/4"

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MILL SUPPLY DIVISION

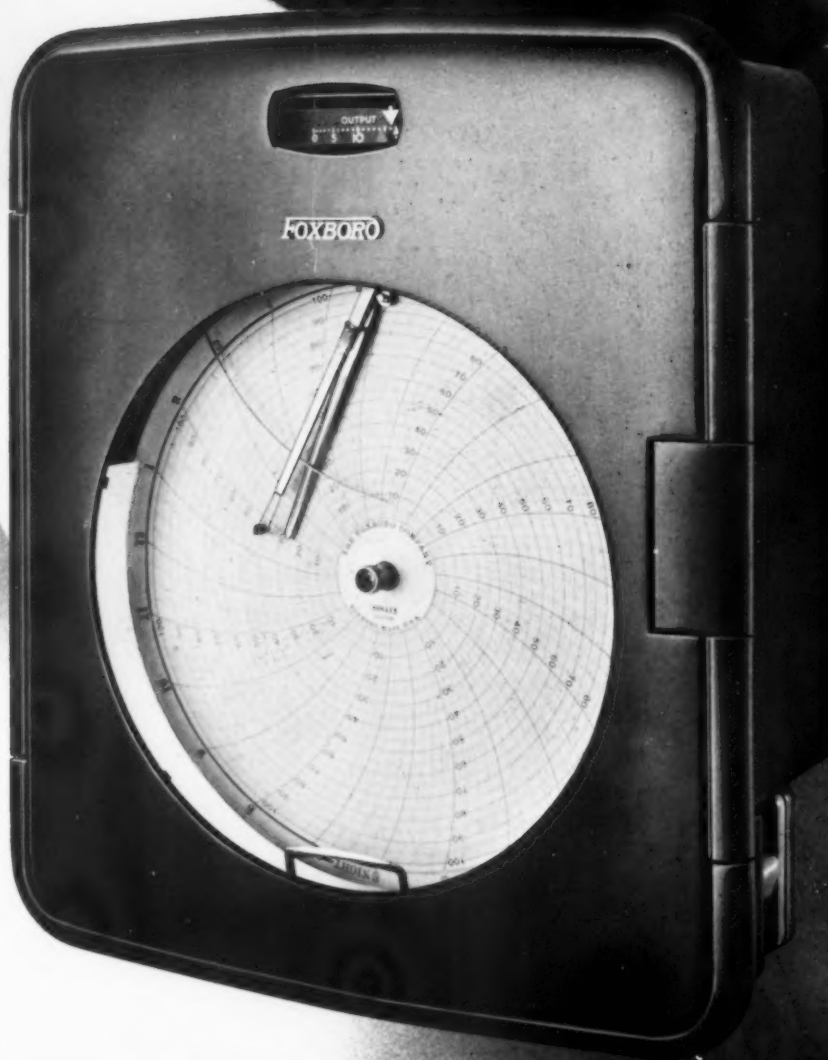
Order from your distributor. THE BRISTOL COMPANY, Mill Supply Division, 132 Bristol Rd., Waterbury 91, Connecticut.

AN "EYE-OPENER" FOR Sustained Accuracy

When the temperature of a pipe still in Oklahoma was held automatically to within 1°F. day after day... eyes popped. Never before had such a record been approached! It clearly demonstrated the superiority of a truly modern controller... Foxboro's Model 40.

Such records of sustained accuracy are made possible by completely new engineering design and standards of mechanical perfection. For example, friction and backlash are practically eliminated by parts made to much closer tolerances than ever before and by the permanent alignment of these parts.

Sustained accuracy is *only one* of many advantages responsible for the enthusiastic acceptance of Model 40 Controllers... over 12,000 have been purchased by industry in less than two years.



FOXBORO
REG. U. S. PAT. OFF.

M-40

"THE FINEST MODERN CONTROLLER"

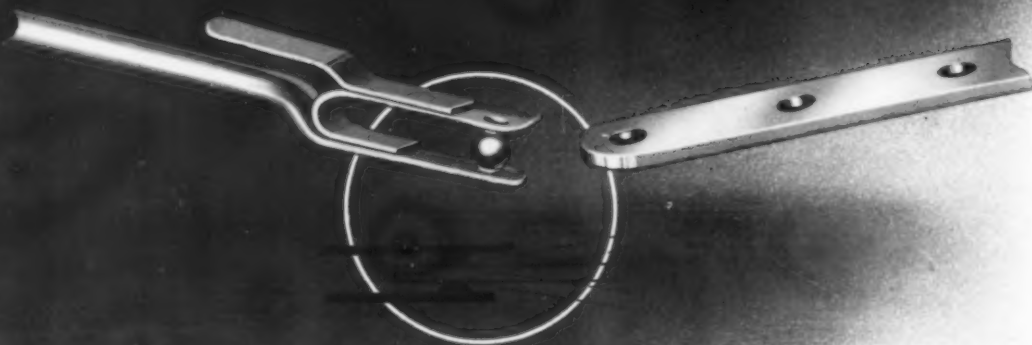


AN "EYE-OPENER" IN LINKAGE DESIGN



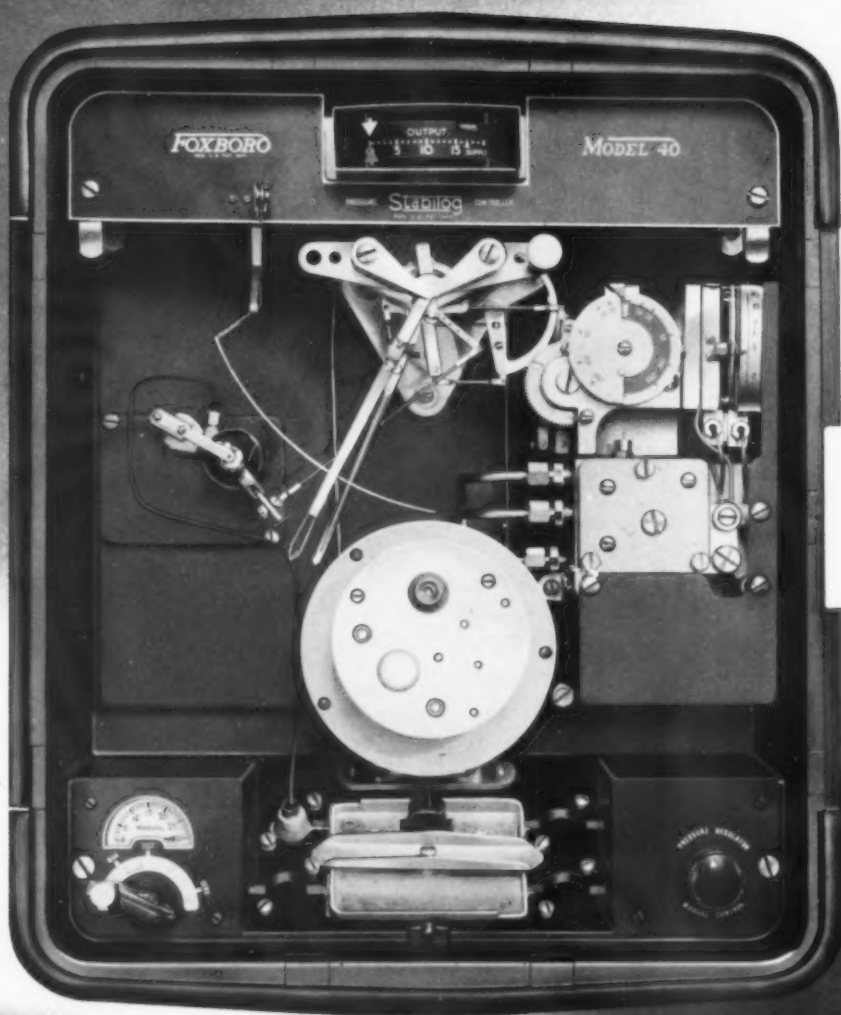


The Model 40 Pneumatic Controller is available for temperature, pressure, flow, liquid level, humidity, density, etc., in a full range of control actions and combinations. Write for Bulletin 381. **The Foxboro Company, 262 Neponset Avenue, Foxboro, Mass., U. S. A.**



Self-Aligning Linkage

This revolutionary new link is so designed that it always lines up properly with complete freedom from binding or backlash. Linkage operates on principle of universal joint. It is of strong tubular construction, tipped with a precision ball which rides in a precision hole with a uniform tolerance of $\pm .0002$ ". Such extreme accuracy was not possible to achieve on previous types of links. Another important feature that makes Model 40 the finest modern controller.



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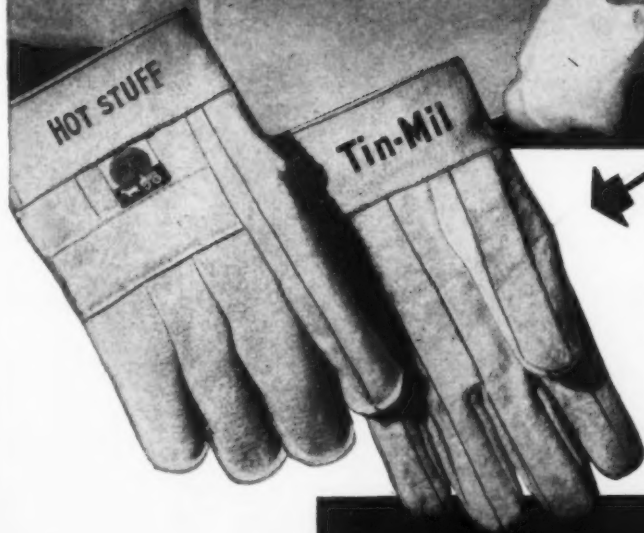
M-40

"THE FINEST MODERN CONTROLLER"

The Right Glove for Every Job



Photo courtesy of Calco Division, American Cyanamid Co.



HOT MILL GLOVES—For steel and tin plate handling, or wherever protection is needed against heat. Long wearing. Extra large to slip off easily. Styles 8854 (inseam), 8855 (outseam).

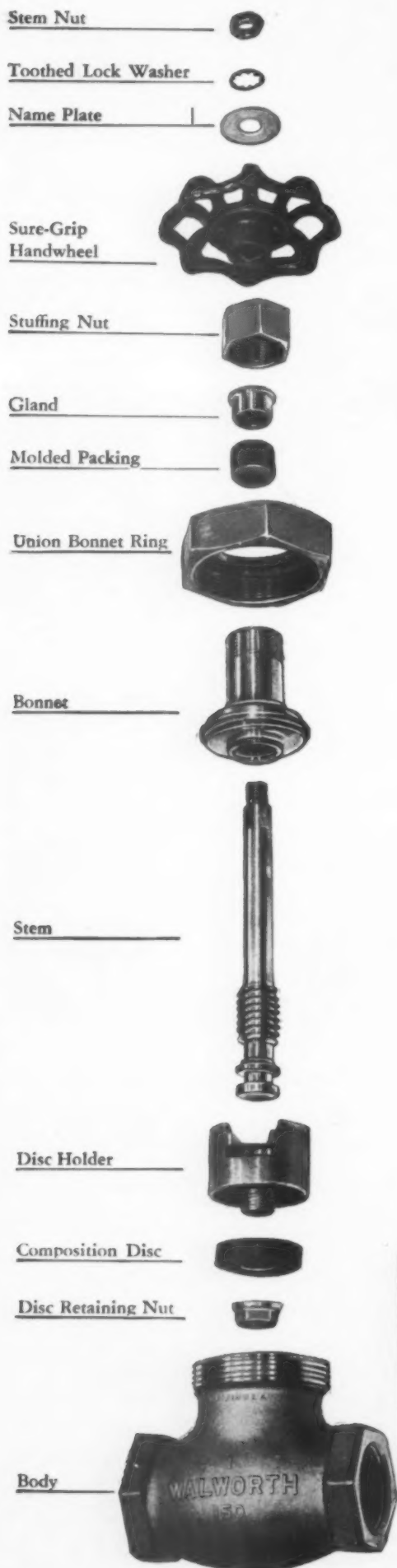
Riegel
work gloves



Production efficiency is the key to profits...and this applies to the "little fellow" as well as to big business. Better work gloves help to promote better production efficiency, for skilled hands that work in comfort...with full protection...will do a better job.

Riegel Work Gloves are the best you can buy...comfortable, long-wearing and economical...qualities made possible by complete Riegel control in one plant, from raw cotton to finished glove. No other work glove is made in this manner.

WRITE FOR FREE CATALOG
and list of distributors, to
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TO MAKE A GOOD VALVE BETTER



Walworth has redesigned and improved its No. 95 Quality Bronze Globe Valve.

150 pounds working steam pressure at 500F

300 pounds cold water, oil, or gas.

Can be repacked under pressure when fully opened.

The Walworth No. 95 Bronze Globe Valve has always been tops with piping men because they liked these features: Renewable composition disc; lock-on, slip-off disc holder; union bonnet construction; deep stuffing box; tough bronze body made of Composition M (ASTM B61).

Now Walworth has added these improvements: (1) New cylindrical disc holder that accurately guides the disc to the seat, regardless of the position in which you install the valve. (2) Newly designed, air-cooled, sure-grip handwheel that you can grab and turn, even when wearing greasy work gloves. It has a tapered square hole sized to gage to fit snugly on the finished square of the stem. (3) Toothed lock-washer to prevent the stem nut from becoming loose. (4) All parts have been redesigned to give maximum service and strength.

Walworth Quality Bronze Valves are available in Globe (No. 95), Angle (No. 96), or Check (No. 97) types and in sizes from 1/4 to 3 inches (check valves 1/4 to 2 inches). Ask your Walworth distributor to show you the improved Walworth No. 95 Bronze Valve, or write for further details.

WALWORTH
valves and fittings
60 EAST 42nd ST., NEW YORK 17, N. Y.

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IN THESE HARD-TO-HEAT SPOTS

An isolated or hard-to-heat spot that remains unheated costs you money every winter in lowered employee efficiency. Reaching these trouble spots is easy with electric air heaters from the Westinghouse complete line.

This dual-purpose, fan-type unit heats in winter and cools in summer. Mounting is quick and easy on floor, wall or ceiling and you get clean, convenient heat by simply flicking the switch. Convection heaters are also immediately available to assure your employees of comfortable heat with no danger of scorched walls or annoying odors.

The engineering skill and construction know-how that go with the Westinghouse name are inherent in all Westinghouse electric heaters.

Send for your copy of the new Catalog 28-020.
Westinghouse Electric Corporation, P. O. Box
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J-10336



CRANE CABS



ELEVATORS



ISOLATED OFFICES



SHIPPING ROOMS

YOU CAN BE SURE
IF IT'S Westinghouse



Spot the heat where it's needed with Westinghouse industrial heaters

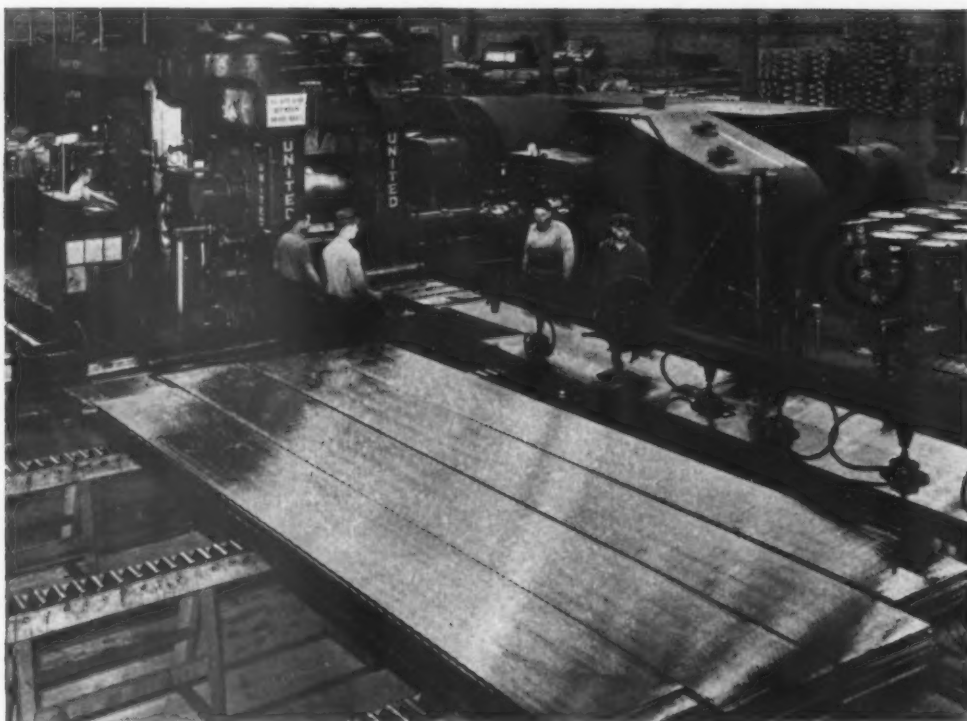
Westinghouse also supplies a complete line of units for any type of industrial heating . . . solid, liquid or air. Strip, cartridge and immersion heaters are built in a wide range of sizes and capacities; glue and melting pots are furnished in 2-quart and 10 and 50-pound capacities, respectively.

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HEATERS AND CONTROL



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Bridgeport Brass Company FOR NATION-WIDE SERVICE

Completely integrated mills in Bridgeport, Connecticut, and Indianapolis, Indiana, bring our customers closer to a dependable source of supply.

Large stocks of Ledrite* free-cutting brass rod in a wide range of sizes in round, hex and square are carried in the mills to take care of orders calling for immediate delivery. These are augmented by comprehensive stocks of mill products in our warehouses located in principal manufacturing centers.

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It was Dodge who took the famous Timken Bearing, mounted it, sealed it, housed it and delivered a pillow block of new high quality—fully assembled, ready to lock on the shaft and carry the power loads of industry with new efficiency.

Dodge develops outstanding power transmission products, as proved by the big success of Dodge-Timken Bearings on millions of industry's toughest jobs.

Dodge-Timken Bearings are supplied promptly from stock in four basic types and a wide range of sizes to meet an almost limitless variety of anti-friction problems.

Dodge also produces Ball Bearing Pillow Blocks which, with Dodge-Timken Bearings, comprise the famous "30,000 hour line." Write for complete bulletins.

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He is your local Dodge Distributor—factory trained—qualified to suggest ways to improve your machine performance, increase production. Look for his name under "Power Transmission Equipment" in your classified phone book.



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Break Driving-Time
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FASTEN FASTER with American Phillips Screws . . . the way plywood panels are fastened to trailer frames . . . with power drivers. *One man takes only 32 minutes to drive 522 screws!* That's 50% faster than slotted screws, with half the labor. And there are no corners too close . . . no angles too awkward. No costly accidents to workers or their work.

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AMERICAN PHILLIPS *Screws*



ALL TYPES
ALL METALS: Steel,
Brass, Bronze, Stain-
less Steel, Aluminum,
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con bronze)

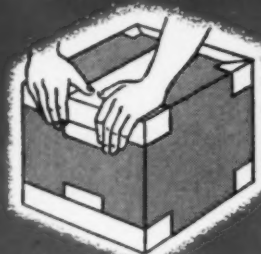
3 "musts"

for Perfect Carton Closure
and Safe Arrival of Shipments:

1. Proper  tape weight, width and quality

2. Proper  Moistening

3. Proper Application



NATIONAL TAYPER
MODEL 52

Proper moistening of tape by a machine that does it **automatically* is an absolute necessity for perfect carton closure to insure safe arrival at destination. A National Tayper dispenses tape that "locks" your containers to the journey's end. Moisture is *evenly* distributed over-all and you use just the amount of tape needed—no more. Tape savings mount up to 50%! And a National Tayper has the built-in speed to handle the heaviest traffic. Protect

your merchandise from damage with a National Tayper—and from pilfering with printed ITSTIX tape—made by the World's Largest Manufacturer of Tape Moistening Machines and Tape. Write today for full information on Nashua's *complete* service.

*Automatic Moistening Control is endorsed by the Association of American Railroads and the Gummed Industries Association, Inc.

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WITH
GUMMED TAPE

SIDE VIEW SHOWING
VISUAL WATER SUPPLY



NASHUA PACKAGE SEALING CO. INC.

NASHUA, NEW HAMPSHIRE

Please send more facts on Nashua's 3-Point Program for Safe Arrival at Destination.

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Company

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All Purpose
CLEANING COMPOUND
 FOR
**WALLS, FLOORS, WOODWORK,
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 MACHINERY**

You save both time and money when you use job proven Elektro Purj-It in your plant cleaning. Scientifically developed to dissolve quickly in water, it actually costs less than 2 cents per gallon. Efficient and quick to penetrate, it loosens dirt and grease. Dustless and non-caking, Elektro Purj-It is the ever growing choice of industrial plants everywhere.

**PROVEN BEST BY
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Send for your
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 Prove it for yourself. Select a tough cleaning job in your plant and let Elektro Purj-It go to work for you. It deodorizes as it cleanses.

THE DIVERSEY CORPORATION
 Industrial Maintenance Department

53 W. Jackson Blvd. Dept. P-11
 Chicago 4, Illinois

F.O.B.

Philosophy of buying

EXACTLY a year ago, in the issue of November 1947, F.O.B. commented on father-and-son combinations in Purchasing Agents' Associations. At that time, there were three such combinations on record, one in the Connecticut Association and two at Seattle. A fourth twosome was recently introduced at the September meeting of the Philadelphia Association, when Harry A. Rowbotham of Belmont Iron Works proposed for membership his son, Harry A. Rowbotham, Jr., who is not only in the same line of work but in the same company, being his father's Assistant P. A. Young Rowbotham has a distinguished record to emulate, for Harry, Sr., in 32 years of active Association work, has served as President of the Philadelphia group and as National Vice President for District No. 8, while advancing to the position of Vice President of his company, in charge of purchases, not to mention his prowess as N.A.P.A. golf champion for several years. Adding an extra fillip to the occasion, Harry, Jr., was enrolled as the 500th member of the Philadelphia Association, a good round figure that marks a new high membership record and a milestone in Philadelphia Association annals.

THE Board of Supervisors of Yuba County, California, received a bonus of good advice along with the annual audit of the County's books last month. Kessell & Chipman, auditors, reported that the County records were accurate and well maintained, adding that they believed a material saving of time and money could be effected by setting up a central purchasing system and hiring a County Purchasing Agent.

GOOD NEWS is always welcome news. The business predictions of the National Association of Purchasing Agents are consistently among the most widely quoted forecasts reported in the daily press, but

they reached a new high in the space accorded to these reports and the bigness and blackness of headlines when the September report predicted a decline of 10% or more in living costs by the middle of 1949. Election year influence was apparent in the wording of this report. Paraphrasing the political adage, "As Maine goes, so goes the nation," the N.A.P.A. statement observed, "As meats go, so goes the cost of living."

BUSINESS commentator Elmer Roessner notes the resurgence of the small order problem as industrial buyers are again turning to hand-to-mouth purchasing policies. In a recent column, he states: "That management is again concerned with the cost of handling small orders is evident by the fact that next week one of the largest industrial corporations will inaugurate a policy of declining orders under \$5. Industrial buyers will be invited to place these orders with jobbers." That will be bad news for the distributors, with whom the small order problem is a perpetual headache. Purchasing agents also have a stake in this problem, that is not always so clearly recognized. It is easy to understand and accept the statement that the cost of handling a small order may wipe out the seller's profit margin; in fact, that's a very conservative understatement. It's just as true that the cost of issuing a small order may be more than the value of the merchandise in question, hiking the real cost of the purchase by 100% or more.

HOW MANY investors take the trouble to find out whether a corporation handles its purchasing on a sound and efficient basis? In most cases, we fear, their decisions are based rather on the income and sales figures alone. However, we have it on the authority of the Director of Purchases of one of the biggest companies on the "big board" that a 5% saving in purchasing (which this company has consistently made or

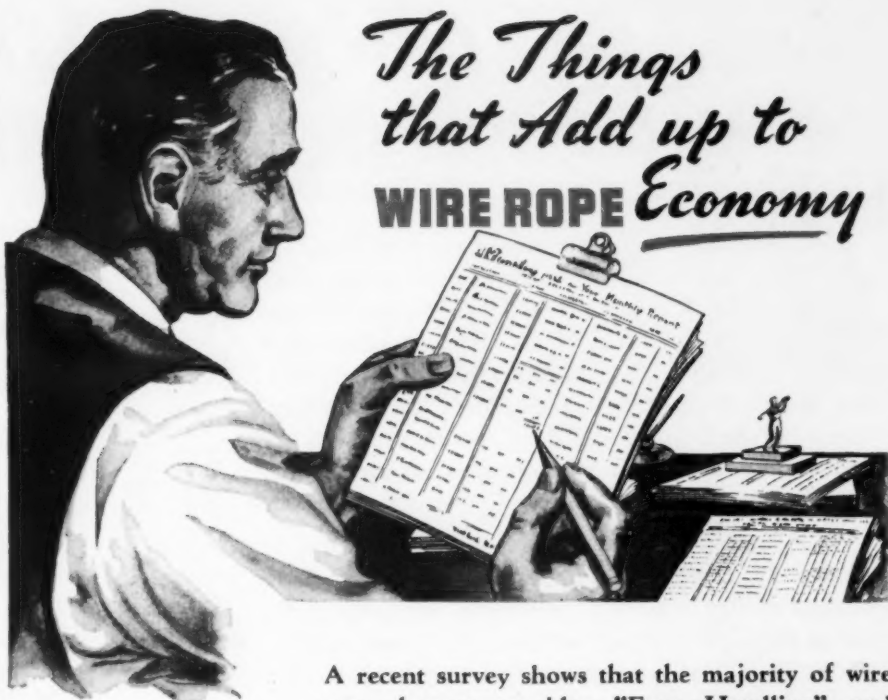
exceeded) represents 75 cents per share on the profit and loss statement. The current dividend rate on this stock is in the neighborhood of \$1.75 per share. Draw your own conclusions as to the contribution of purchasing to successful management.

PURCHASING Agents who have been accustomed to think of the letters SKF as synonymous with bearings may have to revise their vocabulary somewhat and scan requisitions with particular care. Scientists at the recent annual meeting of the American Chemical Society announced the development of SKF-538a, a new local anesthetic that promises to play an important part in medical practice.

THE Netherlands Government recognizes the worth and the services of its purchasing men. Jonkheer F. E. C. Everts, Chairman of the Netherlands Purchasing Commission in New York has been appointed an officer in the Order of Orange Nassau, and A. J. Rothstein, Secretary General of the Commission, has received the knight's cross of the same Order.

ODD ITEMS of government surplus are to be found not only at the Federal level, but all along the line. State P. A. Lacy Wilkinson of Colorado would like to find some one who may have a use for two million fiber sales tax tokens which became obsolete in 1945. Mabel Smith, Alameda County (Cal.) Purchasing Agent, recently secured permission from the Board of Supervisors to dispose of a surplus pair of guinea pigs, originally procured for test purposes at Fairmont Hospital. The legal advisor to the Board gravely pointed out that as the guinea pig inventory is constantly rising, they might feel quite secure in letting the surplus go.

PATIENCE is a virtue, and City P. A. Frank Van Blarcom of Yonkers, N. Y. is a patient man. Dissatisfied with the original low bids of \$1,075.80 and \$1,263.15 on a couple of water main trenching jobs, he ordered a rebidding. Encouraged but still not satisfied, he decided to try again and asked for a third bid, eventually awarding the contracts to the original bidder at \$605 and \$780, thereby saving the city a cool \$953.95, or 40%.



A recent survey shows that the majority of wire rope buyers consider "Easy Handling" and "Length of Service" the two most important factors in determining final rope cost.

If you have not tried **Preformed "HERCULES" (Red-Strand) Wire Rope** you, too, would like its easy handling smooth spooling and long life. Give it a chance to prove its money saving ability! We invite your inquiries.

And more and more wire rope users are finding, by actual experience, that they can depend on **Preformed "HERCULES" (Red-Strand) Wire Rope** for these two top-ranking features. As it is available in a wide range of constructions — both Round Strand and Flattened Strand — they have also found that in "HERCULES" there is a right rope for any heavy duty purpose.



Ask our Engineering Department to recommend the type and construction best suited to your needs.

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A. LESCHEN & SONS ROPE CO.

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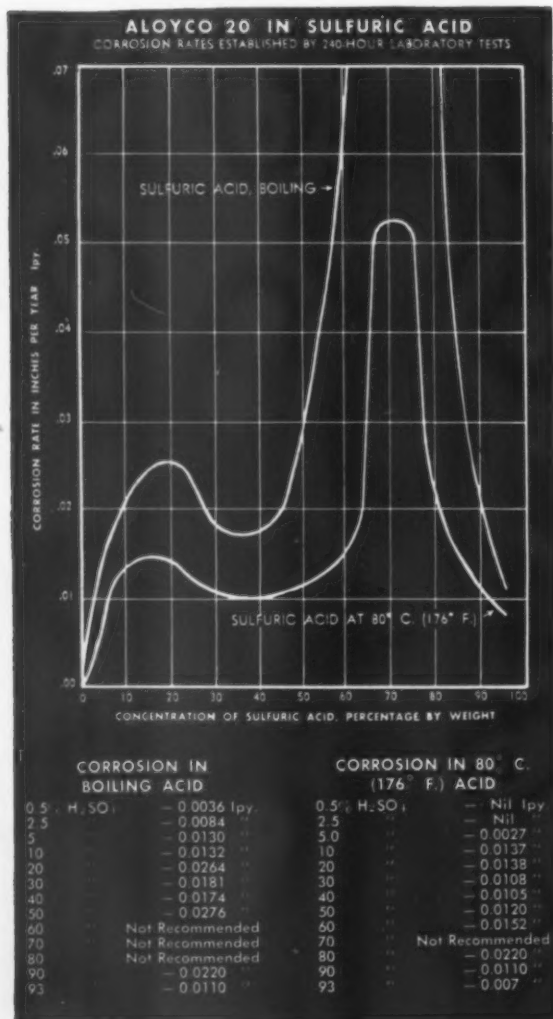
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ALOYCO 20 VALVES

FOR SULFURIC ACID PIPE LINES

ALOYCO 20 is one corrosion-resistant alloy that really stands up to sulfuric acid under most operating conditions. At room temperatures, Alloyco 20 is practically unaffected in any concentration of H_2SO_4 . It is also satisfactorily resistant at the boiling point up to 45% acid strength. In concentrations between 45% and 93%, temperature is an influencing factor. Our metallurgical service is well qualified to recommend regarding proposed applications in this range.

Alloyco 20 also has strong resistance to the effects of high strength sodium hydroxide, hot acetic acid, acetic anhydride vapors and hot nitric-sulfuric solutions. This alloy has wide use among manufacturers of oil refinery products, fertilizers, plastics, rayon, soap, synthetic rubber, coal tar products, explosives and many others. Consult us on your requirements.



• Alloyco Gate Valve No. 111. Has double disc wedge that provides drop-tight closure and long life under severe operating conditions. Available in Alloyco 20, 18-8S, 18-8SMo, the higher chrome-nickel series, Worchite, Hastelloy, Monel, and pure nickel.

ALOYCO

STAINLESS STEEL VALVES AND FITTINGS

GATE, GLOBE, Y, CHECK, TANK, SAMPLING AND V-PORT VALVES
SCREWED AND FLANGED FITTINGS

ALLOY STEEL PRODUCTS COMPANY, INC.

1312 WEST ELIZABETH AVE. • LINDEN, N. J.

Quick Delivery

**JOHNSON
BRONZE**



POWDER METALLURGY

● Here is Good News for manufacturers of all types of equipment. Now you can secure LEDALOYL bearings, bushings and parts . . . particularly in the smaller sizes . . . in days . . . not months. Our new and enlarged facilities . . . plus new equipment . . . plus new methods have made this prompt delivery possible.

Good delivery is but one of many reasons for specifying LEDALOYL. This new and unusual bearing material combines all of the best features of powder metallurgy. Our exclusive process of *pre-alloying* the basic materials . . . casting copper, tin and lead into a high quality bearing bronze alloy prior to manufacturing . . . provides a uniform structure with uniform strength and uniform porosity. Thus, the self-lubricating action is both constant and dependable.

LEDALOYL is low in cost. This is particularly true when there is quantity of a size. Each bearing, bushing or part is molded, under pressure, to required size and shape. This eliminates all expensive machining operations. Why not check over your needs today? Give us the opportunity to show you how to save both time and money. There's a Johnson Bronze office as near as your telephone.



JOHNSON
SLEEVE BEARING
450 S. MILL STREET



BRONZE
HEADQUARTERS
NEW CASTLE, PA.

REPLACE WITH GL-5545's!

... It's the watchword among users of motor-control tubes who've found that G.E.'s new gas-filled thyatron has a much longer service life.



**"EXTRA-GENEROUS CHARGE
OF GAS LEAVES PLENTY IN
RESERVE DESPITE 'CLEAN-UP'
FROM ANODE ABSORPTION."**



**GL-5545
RATINGS**

GOOD NEWS for those who want more hours of dependable tube performance! General Electric's GL-5545 thyatron *serves longer* in motor-control work . . . because of the oversize charge of gas. This compensates for anode gas absorption, caused by the inductive load—large or small—found in both field and armature-control circuits.

Your lathes, grinders, machine tools—your presses, looms, or other d-c-motor-driven equipment—these will operate with less interruption, *more profitably*, if GL-5545's are on the job. No need for new circuits or sockets . . . GL-5545's are interchangeable with your present C6J's or 306's.

The same ease of replacement holds good in welder-control work. GL-5545's will do the job—with a higher voltage rating as one plus-factor, and vibration-resisting *strength* as another. Internally braced, with the grid-anode structure rigidly supported both at top and bottom, no thyatron is better built to withstand shocks!

Your nearby G-E tube distributor or dealer will be glad to give you full information, including the economical price. He can make spot delivery of GL-5545's; is anxious to serve your needs promptly and well. Phone him today! *Electronics Department, General Electric Company, Schenectady 5, N. Y.*

Filament voltage	2.5 v
current	21 amp
Peak anode voltage, forward and inverse	1,500 v
Peak cathode current	80 amp
Avg cathode current	6.4 amp
Current averaging time	15 sec
Ambient temp range	-55 to +75 C

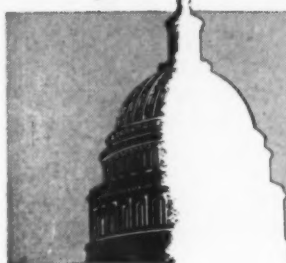
Distributors and dealers everywhere, backed up by additional G-E tube stocks in centrally located key cities.

GENERAL ELECTRIC

161-GA26-8880

FIRST AND GREATEST NAME IN ELECTRONICS

Purchasing Previews



A Washington Report for Purchasing Agents

November 1, 1948

NEW OPERATING PROCEDURES FOR ECA

Economic Cooperation Administration is operating on the premise that the economic crisis conditions which prevailed earlier in the year in Western Europe have been met, and that the reconstruction phases can be accelerated.

In seeking to give greater stability to the European countries participating in the Marshall Plan, ECA now has developed operating procedures which will permit the participating nations to plan their purchases in advance—and incidentally, will give U. S. suppliers a better long-range indication of what the countries will buy.

The new procedure will be to allocate to each participating country the amount of dollars which the country will be able to spend during a specific quarter. This allocation of money will be made 120 days in advance of the quarter. Also partial authorization will be made for the succeeding two quarters in order to give the countries a chance to place long-range procurements of items where there is a longer lead time.

When a participating country receives a dollar authorization under the new procedure, a list of proposed purchases during the quarter must be submitted in detail 90 days before the beginning of the quarter for which the purchase has been approved.

ALLOCATION OF NON-FERROUS METALS BEGINS

Voluntary allocation of materials is edging into non-ferrous metals with a program to earmark copper, lead, bismuth, zinc and cadmium for the strategic and critical materials stockpiling program.

The tonnages of these non-ferrous metals required for the stockpiling program are substantial, and it is significant that even without a program of stockpiling the domestic production and imports do not meet the current rate of use.

Under present plans, there will not be a series of industry voluntary agreements in non-ferrous metals, as there have been in steel; the allocations will be restricted to stockpiling.

Attitude of the Government officials administering the program and of the steel producers who are most directly concerned, is that the voluntary allocations are working out fairly well, and that more rigid controls are not needed.

There is some division of opinion among consumers of steel, depending on where they feel their interests lie. Some industries which are not included in the voluntary programs and which fared better under the war allocations program, indicate they favor mandatory controls.

INVENTORY POSITION INDICATES INDUSTRY'S OPTIMISM

Inventory figures still continue to tend upward, but as has been the case for the last 12 months, the trend has been influenced more by higher prices than by actual physical increase.

There has been some tendency toward adjustment in the distribution levels, with some sellers closing out lines which were added during the immediate postwar period when sales were fairly automatic. On the other hand, the increase in overall inventory value speaks for itself, and bears evidence that there is no skepticism about future sales.

RECORD LEVELS CONTINUE IN CAPITAL OUTLAYS

Expenditures for new plant and equipment continue at record high levels. The total amount which industry will spend to expand and modernize this year is now estimated at \$18.6 billion. This is \$2.4 billion more than was spent by business last year for this purpose.

The present figures confirm the early estimates in the total spending, but actually there has been a decided shift in the pattern of spending.

Manufacturing companies expect to spend substantially more than they had earlier anticipated. This is also true for electric, gas utilities and mining companies.

On the other hand, railroads and other transportation agencies, and commercial and miscellaneous companies will have spent a much more modest sum than they had planned earlier in the year.

CLARIFICATION OF TRADE PRACTICE REGULATIONS SOUGHT

Five members of the Federal Trade Commission, testifying before Senator Homer Capehart's Special Committee on Trade Practices recently gave divergent interpretations as to how the Robinson-Patman Act applies to various prevailing trade practices.

Also top legal aides of the FTC, testifying in closed session before the committee, were similarly at odds on instances of how the Robinson-Patman Act applies.

These differences in interpretation have been simmering for a number of years, with business spokesmen in continuous meetings with the Federal Trade Commission attempting to establish acceptable definitions of practices and terms that could be applied universally to business.

The differences came to a head with the ruling by the U. S. Supreme Court holding that a "conspiracy" to use a basing point system to fix prices was illegal. This decision was not revolutionary in effect or suggestion, but along with the decision was the implication that in establishing prices, a mill net price was to be used.

If this dictum were to be established as law, it would automatically rule out nationally uniform prices on the many items of food, drugs, and household goods which are sold on a national price basis.

At the same time, use of a mill net price would rule out absorption of freight costs to equalize prices of raw materials, finished or semi-finished articles on either a national or a zone price basis.

This would mean a major change in the whole pattern of merchandising and would inject a new economic factor in location of manufacturing plants. Such a revolutionary development might destroy the balance which has favored Pittsburgh as a center of steel production, Detroit as a center of the automotive industry, the concentration of cotton textile production in the Southeastern States, and woollens in New England.

Plans of the Capehart Committee are to hold public hearings in Washington during November, December and January to determine what legislative action should be taken to clarify the country's trade practice regulations.

The objective is not to legalize any practices that facilitate conspiracy among manufacturers to fix prices, but primarily to develop regulations that will permit industry to maintain normal competitive sales efforts on a national basis.

How Shipper Saves \$30 per car

Acme methods and Unit-Load Band help chemical shipper roll up substantial savings in time and materials on car load shipments.

Eastern Gas and Fuel Associates, Everett, Massachusetts, market a by-product of coal (ammonium thiocyanate flakes) widely used in the chemical industry.

Carload shipments call for loadings of two hundred barrels, 200 pounds each, double and triple decked.

By using Acme full-floating load methods and Acme Unit-Load Band in place of the previous wood bracing method, this company saves approximately thirty dollars in time and materials on every car shipped.

This is just one instance of our ability to help get substantial savings for shippers. Whether you ship by the bag, box, or barrel, ask an Acme Shipping Specialist how we can help you. Or clip and mail the coupon for free booklet of actual case histories.

STRAPPING DIVISION

ACME STEEL COMPANY

Acme Steelstrap

NEW YORK 17 ATLANTA CHICAGO 8 LOS ANGELES 11

NOVEMBER, 1948



ACME FULL-FLOATING LOAD METHODS
With Acme Unit-Load Band mean an easier "ride" for shipments, less shock damage in transit, safe arrivals. These pictures show double-decked carload of barrels of ammonium thiocyanate flakes on its way to be used in making insecticides, adhesives, and dye fixatives.

MAIL THIS COUPON NOW

Acme Steel Company, Dept. P-118
2838 Archer Avenue, Chicago 8, Illinois

Please send me a free copy of your booklet,
"SAVINGS IN SHIPPING."

Name _____

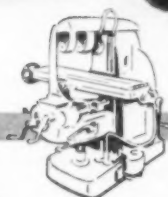
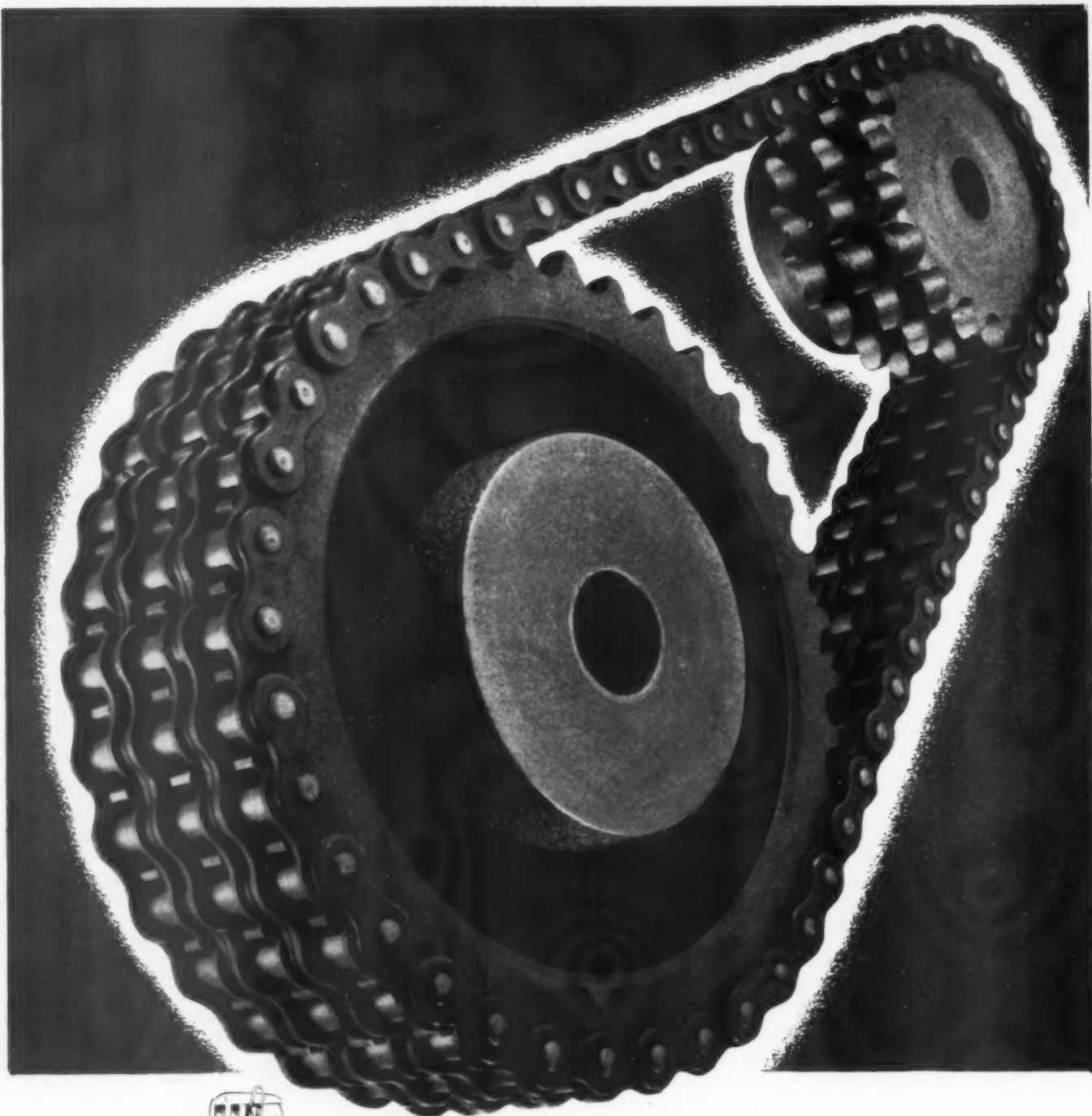
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**ACME STEEL CO.
CHICAGO**



**Adaptability
and Flexibility
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Simplify
Power Transmission Designs

No matter what your drive problems, the extreme adaptability and flexibility of Whitney Chain Drives will help you simplify your power transmission designs. In addition, the wide range of selection makes application easy. Whitney Chains deliver full power without slippage. The positive grip of chain, deeply seated in sprockets assures smooth transmission of power from driver to driven mechanisms. Their high shock-absorbing qualities give maximum service with minimum maintenance. Investigate Whitney Chains and Cut Tooth Sprockets . . . *the all steel drives* for your designs.

WHITNEY CHAIN & MFG. CO.

Division of Whitney-Hanson Industries, Inc.
207 HAMILTON STREET, HARTFORD 2, CONNECTICUT

NEW STANDARDS of ACCURACY made possible by NEW TIMKEN® BEARINGS!

*TIMKEN® "Double-Zero" bearing
has run-out reduced by half!*

HERE'S an opportunity for new and greater precision in machine tools, scientific instruments, and other machinery where extreme accuracy is essential. It's the new Timken "Double-Zero" bearing—*twice as accurate* as the most accurate Timken bearing previously made!

Maximum run-out tolerance, the standard of bearing accuracy, is only 75 millionths of an inch in the "Double-Zero" bearing, compared to 150 millionths in the Timken "Zero" bearing—until now the most accurate Timken bearing on the market.

NEW MACHINES AND INSTRUMENTS

Producing bearings accurate to a few millionths of an inch calls for machines and measuring instruments of equal accuracy. To determine surface accuracy, Timken developed the Profilograph, which measures microscopic irregularities to within one millionth of an inch. To gauge run-out, the Timken research organization invented the concentrometer, which measures concentricity to within 5 millionths of an inch.

And Timken engineers designed and built many special types of machine tools to provide the required manufacturing accuracy. Machines and instruments like these, plus painstaking manufacturing methods based on years of bearing experience, made possible the extremely close tolerances in the new "Double-Zero" bearing.

As an extra step in manufacture, after assembly, a natural and true geometric contact is generated between

all rotating parts of the "Double-Zero" bearings. This results in a "Generated Unit Assembly". It assures positive roll alignment, long lasting precision, permanent adjustment and smoother operation.

The new "Double-Zero" bearing is the latest example of Timken leadership in serving the bearing needs of all industry. Whenever you buy bearings, it pays to look for the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

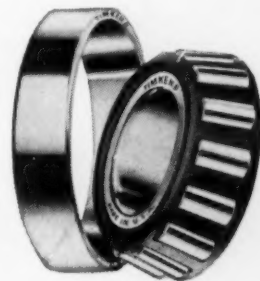
A PRECISION TIMKEN BEARING FOR EVERY REQUIREMENT

CLASS	"00" (Double-Zero)	"0" (Zero)	"3" (Three)
RUN-OUT	.000075"	.000150"	.000300"
TYPES AVAILABLE	Standard Single Row	Standard Single Row	All types
SIZE RANGE	Up to 10" O.D.	Up to 12" O.D.	Up to 12" O.D.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

For Consumer Size



ECONOMIZE WITH

Bemis Deltaseal Bags

**THE SMART-LOOKING
PACKAGE WITH
SALES APPEAL**

Deltaseal: Reg. U.S. Pat. Off.

Many products such as sugar, flour, rice, salt, beans, corn meal and cereals are packed in Deltaseal Bags with savings in packaging costs that will amaze you.

Your brand will be rich and colorful on the excellent printing surface of Deltaseal Bags.

Deltaseal Bags and the Deltaseal Packaging System permit major operating economies in your plant. Your Bemis representative will give you all the details.

Deltaseal Bags have the handy pouring spout and are available in sizes from 2 lbs. to 25 lbs.

BEMIS



BEMIS BRO. BAG CO.

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AT CONCRETE FLOOR PRICES YOU CAN GET
THE BEAUTY AND DURABILITY OF TILE

When you want concrete floors of tile beauty and durability specify the use of Colorundum. For hotels, banks, stores, hospitals, show rooms, service stations and factories you get bright, colorful floors with an armor plate surface of long life — at the cost of an average concrete floor. Colorundum is a dry powder, composed of powerful coloring mediums, fused aggregates, water-proofing and hardening elements plus cementitious binders.

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FOR INTEGRALLY COLORED CONCRETE FLOORS

Colorundum is used exactly as it comes from the container and permits the foolproof application of a dust-coat floated and trowelled into the topping. The non-slip, dense surface of Colorundum makes it an ideal flooring for indoors or outdoors . . . both on new work or resurfacing old floors. Write for further interesting information.

A. C. HORN COMPANY, INC.

ESTABLISHED 1897—50th ANNIVERSARY
manufacturers of materials for building maintenance and construction
43-36 TENTH STREET, LONG ISLAND CITY 1, N. Y.

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Subsidiary of Sun Chemical Corp.



J. C. Johnson, President
S. T. Johnson Co.
Oakland, California

He cuts He uses

"Standardization of motors and parts is most important to our company," says Mr. J. C. Johnson, President of the S. T. Johnson Co., of California. "Our burners can be made in several sizes and types without changing the motor size or application, even when making improvements and new models. Standardization," continues Mr. Johnson, "means lower production and inventory costs for oil burner manufacturer and distributor or dealer. The user also saves again and again when service or renewals may be required."

More for your money with STANDARD



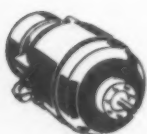
Fractional-Horsepower MOTORS

GENERAL ELECTRIC is now producing *definite-purpose* motors, such as oil-burner motors, jet-pump motors, hermetics and the others shown below, as well as 11 types of general-purpose motors. These are being made in *standard designs*. Ratings, performance standards, dimensions, and special features (such as type of enclosure, bearings, etc.) follow the standards worked out by the National Electrical Manufacturers Association in conjunction with your industry associations. Thus, you get all the advantages of standardization and—over 1600 G-E standard motors to choose from.

A Recent Bulletin You'll Want. A brief, but concise G-E bulletin tells what the standards are and how they

are applied. Ask your local G-E office for Bulletin GES-3565 or write *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

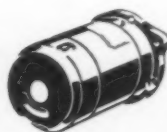
Lower Prices are Proof. Increased production costs made it necessary for General Electric to adjust its prices upwards in June of this year. However, prices on fractional horsepower motors are still 5% lower than they were in December, 1947 due to two successive price reductions this year both of which were direct results of the standardization program. With fewer motor types to build, G.E. has been able to concentrate on those motors most widely demanded. The resulting savings are passed along to you and your customers in the form of worthwhile price reductions.



Unit-Bearing Fan



Washing Machine



Oil Burner



Machine Tool



Gas Pump



Hermetic Refrigeration

costs

STANDARD



Oil Burner MOTORS

This compact, clean-lined oil-burner motor is a splendid example of small-motor standardization. A *standard* fractional-horsepower motor designed *specifically* for use on domestic oil burning equipment, it gives the burner manufacturer *all* the special features he needs.

Compactness plus the two-lug flange mounting (NEMA standard) with concealed through bolts help give the heating plant a trim, modern appearance.

Positive protection from harmful overloads is assured by a built-in, manual reset Thermo-Tector.

Quiet operation and long service life are obtained by the use of split-phase design. Split-phase motors are simple in

construction; they have no brushes or commutators. They give many years of service with a minimum of maintenance. They are very quiet in operation.

Rigidity combined with light weight results from the use of welded, rolled-steel stator-frame construction.

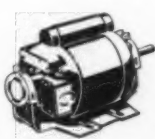
General Electric oil burner motors are available in ratings of 1/12, 1/8, and 1/6 hp for operation on 115 or 230 volts, 60-cycle a-c. Full load speed is 1725 rpm. They are also available in ratings of 1/8 and 1/6 hp on 115 or 230 volts, 50-cycle a-c. Full load speed of these motors is 1425 rpm. All G-E oil-burner motors meet the requirements of the Underwriters' Laboratories, Inc. for this service. For further information call your nearest G-E field office.

GENERAL ELECTRIC

700-91



Belted Fan



Coal Stoker



Jet Pump



Shaft-Mounted Fan



Sump Pump



General Purpose

Here is **WHY** the

CONCAVE SIDE

(U.S. PATENT NO. 1813698)

SAVES You Many DOLLARS In V-BELT Costs!

Every time a V-Belt bends around its pulley, the *top* of the belt is under *tension* and grows *narrower*. The *body* of the belt is *compressed*—causing the *sides* to *bulge out*!



FIG. 1

This forced bulging of a *straight-sided* V-Belt against the sheave groove walls naturally produces excessive wear along the *middle* of the belt's sides—as indicated by the arrows. Also, because the full side of the belt does not *uniformly* grip the pulley, there is a definite loss in drive efficiency.

Now see the difference when you bend the V-Belt that is built with the precisely engineered Concave Side (U. S. Patent No. 1813698)—the Gates Vulco Rope.

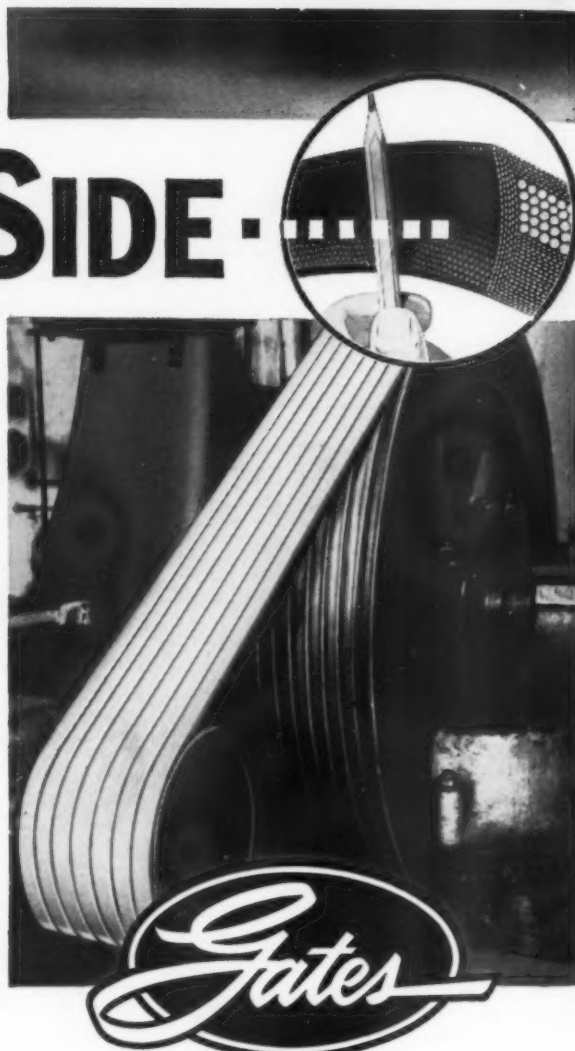


FIG. 2

As the Gates Vulco Rope bends, its Concave Side becomes straight (Figure 2). It exactly fits the sheave groove—and this gives you two very definite savings:—

(1) No out-bulge of the sides means uniform side-wall wear—*longer life*!

(2) *Full side-width* grip on the pulley carries heavier loads and sudden load increases without slippage—saving your belts and saving power too!



Gates

REG. U. S. PAT. OFF.

The Mark of SPECIALIZED Research

The Concave Side is MORE IMPORTANT NOW Than Ever Before!

Because the *sides* of a V-Belt are what actually *drive* the pulley, it is clear that any increased load on the belt means a heavier load that must be transmitted to the pulley *directly* through the belt's sidewalls.

Now that Gates SPECIALIZED Research has made available to you *SUPER* Vulco Ropes—carrying fully 40% higher horsepower ratings—the life-prolonging Concave Side naturally delivers greater savings today than ever before.

GATES VULCO ROPE DRIVES

Engineering Offices
and Jobber Stocks

IN ALL INDUSTRIAL CENTERS

of the U. S. and
71 Foreign Countries

THE GATES RUBBER COMPANY
DENVER, U.S.A.

"The World's Largest Makers of V-Belts"

4810

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is a 

TRADEMARK

PHOTACT is a K&E trademark that is registered in the United States Patent Office. It is the name given by KEUFFEL & ESSER CO., for the **partners in creating** protection of their customers, to certain papers and cloths and a developer and a fixer for making reproductions. The name PHOTACT may be properly used only in connection with genuine K&E products.

KEUFFEL & ESSER CO.

EST. 1867

NEW YORK • HOBOKEN, N. J.

CHICAGO • ST. LOUIS • DETROIT • SAN FRANCISCO
LOS ANGELES • MONTREAL

*Drafting, Reproduction, Surveying
Equipment and Materials
Slide Rules Measuring Tapes*



the Power

to move Mountains of Freight

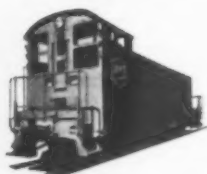
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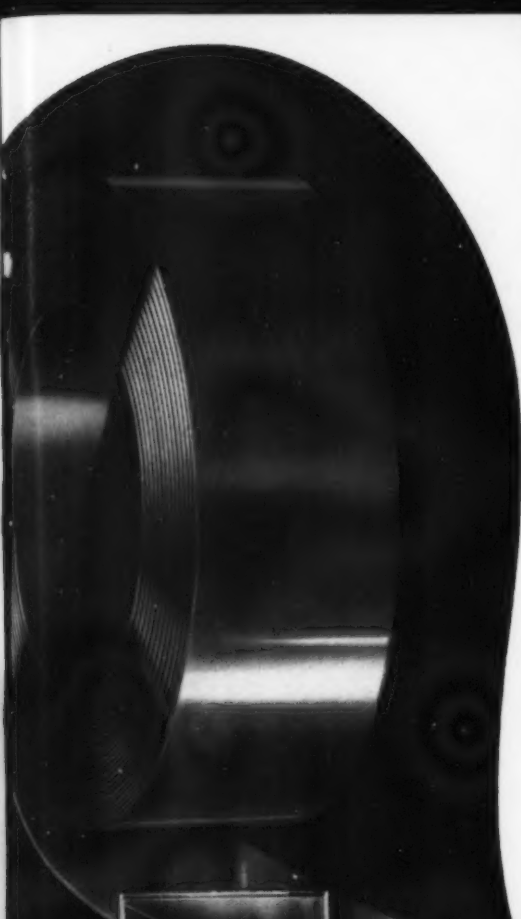
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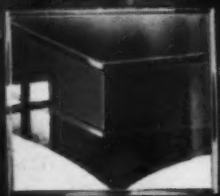
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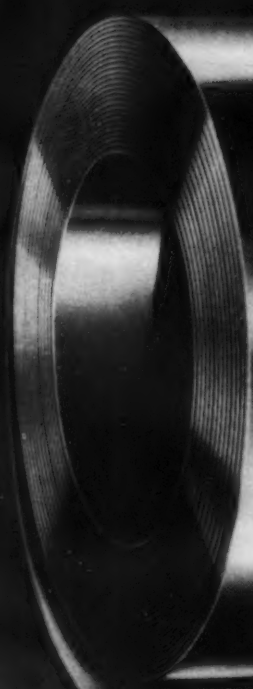
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PURCHASING

The National Magazine of Industrial Procurement

NOVEMBER, 1948

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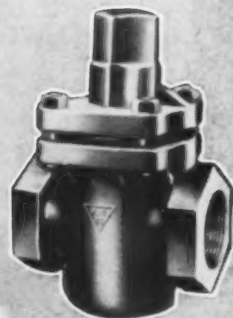
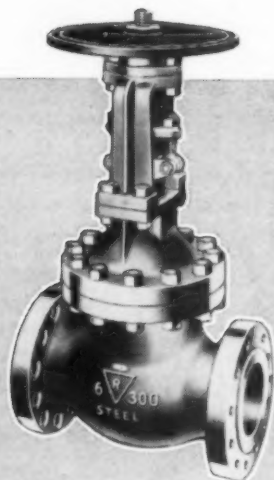


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Put Scrap Iron to Work

EVERYONE is concerned with the necessity of maintaining a high rate of steel production and conserving our ore supplies. Everyone knows that the scarcity of scrap iron and steel is one of the serious problems facing steel producers and foundries. Everyone can help in meeting this problem by seeing to it that all available scrap is collected and returned promptly into the production cycle for constructive use.

For the most part, the return of production scrap is being efficiently handled. This constitutes the basic source. Unfortunately, it is not nearly enough to meet the demand and to sustain current rates of production. The difference must be made up by an intensive and consistent drive to round up all the available tonnage that exists in the form of idle and obsolete parts, machinery and equipment in factories and homes, on farms, and in both public and private institutions.

Experience during the late war demonstrated that important tonnages are available from such sources. There is ample evidence that these sources have not been exhausted. The accumulation through normal obsolescence and depreciation in the postwar years has been increased in many instances by conversion and modernization programs. It is high time for another searching look around the plant, to put such scrap to work.

In New England, where scrap iron drives have already been initiated on a broad scale, the various state governors have taken a personal interest in enlisting every community to active participation. It is significant that Purchasing Agents Associations are among the sponsoring agencies, and individual purchasing agents are prominent on state and local committees engaged in the campaign. Every purchasing agent has a similar opportunity and obligation to help. It is to their own self-interest as well as in the national interest to see that scrap gets back to the mills for the making of steel.

Stuart F. Henrity

CORRECTION

Through an error in the tabulation of steel producing units, appearing on pages 93 and 94 of our September issue, the ownership of four of these units is wrongly shown. The Pueblo, Colorado, mill (1,272 tons) listed as an operation of Armco Steel Corp., should have been listed as the Colorado Fuel & Iron Corp. The mills at Cleveland, Ohio, (840 tons), Aliquippa (1,764 tons) and Pittsburgh (2,138 tons), Penna., all attributed to Bethlehem Steel Corp., should have been listed as Jones & Laughlin Steel Corp. facilities. Jones & Laughlin are the fourth largest steel producers in the country. We regret these errors and the resulting inconvenience that has been caused to some of our readers. Please make these corrections on your copy of the list.



A New Columbia-Southern Manual

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on Chlorine*

Prepared by the joint Technical Staffs of Pittsburgh Plate Glass Company, Columbia Chemical Division, and Southern Alkali Corporation, this 72-page Chlorine Manual is just off the press. It presents basic information and data which is useful to technical, transportation and purchasing men, and of interest to managing executives and others who are concerned with the buying, handling and use of Chlorine. We shall be glad to send you a copy. Just send your request on your company letterhead. Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth at Bellefield, Pittsburgh 13, Pa.

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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

District Conferences of purchasing men are becoming an important feature of the Association year. The second annual meeting of District No. 6, held at Cincinnati in the closing week of September, maintained a high standard of excellence with a program of unusual interest and informative value. In addition to the general conference story on page 105, several of the leading papers are reported in complete detail.



One of the outstanding sessions was the forum devoted to **Cost Reduction** through purchasing, reflecting the modern viewpoint that the most potent and permanent source of savings in the cost of purchased parts and materials lies in the analysis of requirements and design prior to the actual procurement. This calls for thorough purchasing knowledge of requirements and a definite policy of close cooperation between all departments of the company to arrive at the most economical over-all decision. The article by M. E. Carlisle, on page 96, outlines an effective policy and program for achieving these ends, and V. G. Lottmann, on page 93, describes the practical techniques for carrying out such a program.

Conference keynoter E. B. Gallaher made the startling proposal that what this country needs is an **Engineered Recession** to combat the perils of continued inflation with the least harmful effects on business and the national economy. As an industrialist and employer of long experience, his comment on the development and opportunities for the purchasing executive is also worthy of thoughtful attention by every purchasing man. Turn to page 90.

This month's survey of purchasing opinion concerns the problem of **Overtime Costs**, which have become a serious factor in the cost of purchased products. Industrial buyers are keenly interested in eliminating this "extra" from their vendors' invoices. Can it be accomplished, while still maintaining essential delivery schedules? Several phases of the problem are explored in the survey reported on page 97. You will find it interesting to compare your own thoughts on the subject with those presented in the summary, and you'll find some stimulating suggestions.



Most **Small Business** has the ambition to grow up into big business. Nevertheless, the small enterprise is a feature of our industrial system having special problems and characteristics all its own, and is a matter of continuing concern in our economic and political thinking.

E. L. Cady's article on page 115 considers the smaller producer from the viewpoint of the industrial purchaser and offers some practical suggestions on how such suppliers can fit into the picture with mutual benefit.

This month's **Guest Editorial** (page 89) presents a distinguished Canadian purchasing executive, who recently served as the Dominion's representative on the Executive Committee of N.A.P.A. George Ireland's theme is one of the basic truths inherent in the purchasing function—that the buyer deals not only in tangible materials but is in a strategic position to build good will for his company, and good will pays big dividends.

Faced with the strong possibility that we may find it necessary to invoke controls on materials and production, comparable to the conditions of wartime, the system of **Voluntary Allotments** has new interest and significance for purchasing men. On page 103, a steel industry executive reviews the history of this development, its legal basis, its method of operation, its effectiveness in meeting current problems of supply, and what may be expected in an extension of this policy of self-control.



The **Commodity Markets**, approaching a balance of supply and demand, and with new relationships resulting from recent industrial expansion and the uncertainties of economic developments, call for intensive study keyed to present conditions. Expert opinion on the outlook for raw materials is presented by A. H. Phelps (page 138) and C. A. Wolfe (page 102). See how two practical purchasing men read the statistics and the industrial barometers.

Keep up to date on new developments. Do you know how **Oxygen** is being used today in the manufacture of iron and steel? (Turn to page 99.) Are you familiar with recent progress in **Fibreboard Containers**? (Turn to page 136.) Is your program and method of **Floor Maintenance** in line with approved modern practice? (Turn to page 132.) Interested in **Plastics**? (See page 111.)

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 146) will help you to keep up-to-date on these matters.



From Horseshoe Iron to Aircraft Alloys

Reckoned in terms of transportation, Ryerson steel stocks and steel experience span the gap between plodding percheron and flashing jet plane.

On the hoofs of thousands of horses, Ryerson iron clattered along the cobble streets of yesterday. Now, Ryerson aircraft alloys streak through the sub-stratosphere in the high speed planes of the Air Age.

This century of service to transportation and allied industries illustrates how Ryerson has kept pace with progress. Ryerson stocks of carbon, alloy and stainless steel—continually changing with the times—always meet the specialized requirements of every major industrial field.

In these days of heavy demand, the particular steel you need may be temporarily out of stock. But from long experience we can usually suggest a practical alternate. So, whatever your requirements, we urge you to call our nearest plant.

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Good Will Pays Dividends

By George A. Ireland



EVERY purchasing agent is classified either as a "heel" or as an ambassador of good will for his company. We build our own reputations, for better or worse, as we meet and deal with the salesmen who call upon us, and these reputations soon become public property through the conversations in hotel lobbies and railroad coaches, and even in our own reception rooms. Eventually, it is bound to come back to our firms, and is reflected in our business relationships, the cooperation of our suppliers, and our own value to the company.

Obviously, good will is an asset to the firm, that pays handsome dividends and should be earnestly cultivated. There are also important personal dividends in the form of a better physical and mental attitude, a clear conscience, a wider circle of friends, a more pleasant working day, and the appreciation of our employers.

It is just as easy to build good will as to destroy it, and we are fortunate in having a sound principle to guide us. We have only to live up to the Purchasing Agents' Code—loyalty to his company, justice to those with whom he deals, and faith in his profession. To put it even more simply, it is the practical application of the Golden Rule in business. If we make an effort, or acquire the habit, to treat the other fellow as we would like to have him treat us and the salesmen who represent our company, we will not be far wrong.

George A. Ireland is Purchasing Agent of National Paper Goods, Ltd., Hamilton, Ontario, Canada. Recently he completed a term as President of the Canadian Council of Purchasing Agents Associations and as Vice President of the National Association of Purchasing Agents for District No. 5, which embraces eight active Associations in the industrial belt of the Dominion, extending from Montreal to Winnipeg. He is a native of Hamilton, and attended the public schools and commercial college in that city. His entire business experience has been with two employers. Starting as a boy with Buntin Gillies & Company, Ltd., he advanced to the position of buyer and manager of the Stationery Department of that company, resigning after 17 years to answer the call to the colors in World War I, where he saw four years of overseas service, returning home with the rank of Pay Sergeant. Postwar, he joined the National Paper Goods organization and is now in his thirtieth year with that company. Originally, he was in charge of both the Order Department and the Purchasing Department. With the growth of the company and of the purchasing responsibility, he has for several years devoted his entire time to purchasing. He has been an active and dependable worker in the Hamilton Purchasing Agents Association, serving as its President in 1941 and National Director in 1943, and as Treasurer of the Canadian Council prior to his election to the presidency. The Masonic fraternity is another of his major interests. A member of more than thirty years' standing, he was Master of his lodge in Hamilton in 1929 and was given Grand Lodge Honors in 1945. Golf is his favorite pastime.



The State of Purchasing and the State of the Nation

Today's complex business conditions demand the executive type of purchasing agent.

Executive status for the buyer carries with it executive responsibilities.

An engineered recession, by the will of the people, is the best cure for inflation.

●
By E. B. Gallaher

Clover Manufacturing Company
Norwalk, Conn.



E. B. Gallaher warns against the peril of letting inflation run its course.

I HAVE been active in business for three generations. Incidentally, I have employed buyers in my various enterprises during this entire period. I have seen the buyer develop from an ordinary, inexperienced clerk, picked at random, to a highly trained specialist in the art of purchasing.

As our economy is becoming increasingly complex and technical, the buyer has grown into a top-level executive, which he should be. The present-day buyer must be a person of high integrity and high intelligence; ordinary intelligence will not do any more. If a buyer desires to step out of the realm of being a clerk to become an executive, he no longer can retain the perspective of a clerk. If he is to be considered as an executive, he must assume the obligation of maintaining high ethics, which go with executive rating, never allowing himself or his methods to become subject to criticism. The size of his concern is unimportant.

This executive must do the buying. To be truly efficient, he must have expert knowledge of what he is buying and how the materials bought are to be used.

He must have expert knowledge as to the order in which the various materials will be required in the

process of manufacture, so as to be certain that all materials will be on hand at the plant when needed. This is important for at least two reasons: (1) he must not pile up inventories of materials months before they are needed, and (2) he must not tolerate the slowing down or closing down of departments for lack of needed materials. Such conditions are not fair to either the company or to labor. This emphasizes the importance of the buyer having personal, up-to-the-minute knowledge of the progress of all work through the shop. If he waits for some shop man to requisition, he is likely to be caught short and be unable to provide needed material on time. This lack of anticipation is a very common complaint, especially in the smaller shops.

The present-day purchasing agent must also be something more than a mere buyer of materials as specified by some shop executive. He must be the eyes and ears of his company, the connecting link between his plant and hundreds of suppliers and potential suppliers, for he is the only man who has direct contact with those who furnish materials to his plant.

He should also consider it his duty to personally go through all circulars, catalogs and technical data reaching the plant. Too often, this valuable information is thrown away by an incompetent mail clerk as "advertising matter". Countless millions are spent

each year by industry to bring new goods and new ideas to your attention. Much of this material must be described by means of printed matter sent by second class or third class mail, but this does not mean that it is unimportant. Quite the contrary; it is one of your greatest assets.

Many plant managers have not kept up-to-date on modern methods. Often they have gotten into a rut and think there is only one way to do a job, when in reality there may be several better ways available. Plant managers will often specify certain materials or certain tools for the simple reason that they have always used them, when as a matter of fact, there are new and better materials and tools available.

An intelligent buyer, who knows his products and the methods used to produce them, is in a prime position to do a great service by calling attention to new machines, new methods, new techniques, and new materials as soon as he learns of their existence. This is because his department is literally deluged by potential suppliers and their salesmen who are bringing to his attention all that is new in the The buyer can do his company a country as soon as it is produced. service by seeing to it that reliable salesmen, who have something that might be of interest, are put in contact with the proper shop men or engineers.

Address at the second annual conference of District No. 6, N.A.P.A., Cincinnati, September 27, 1948.

The intelligent buyer has the mental capacity to ask a salesman: "What does your company have that is new and better than we are using? How are your goods better? Are your deliveries good? Can you suggest any new and better methods that would reduce costs?" A buyer who can say, "I don't know; tell me about it," is a most valuable asset to any plant, for he is picking up everything that is new and passing it on to the proper executives in his company.

Another most important thing is to have at least two regular sources of supply for every product, even though you may prefer one of these sources. Strikes, snowbound traffic, and the like, may hold up shipments from one supplier, which would not affect a second source. And I may add that two salesmen, competing for your business and each getting a share, will try to increase their respective volume by bringing you all sorts of valuable technical data and advance information about their line.

Various shop departments will order some branded material which they have been accustomed to using. Several departments may ask for the same material under other brand names. A buyer who does not know about the commodity may order what has been called for, only to find that he has three or four stocks of identical material, sold under different brand names. I know of one case where a buyer purchased three identical stocks costing about \$5,000 each, or a total of \$15,000 where an investment of \$5,000 would have sufficed.

Another situation met with is the bias of some one in the shop, who will specify some particular article by brand name. The buyer may be fully aware that there are competitive articles, as good in every way or even better, which he can obtain on a more favorable basis, but every time he sends in a sample for testing, word comes back that it is no good. Prejudice is a hard thing to combat, and sometimes it is reinforced by subsidies, but a little personal investigation by the buyer will often break up the practice.

The new Supreme Court ruling in the steel and cement cases has much more to it than most people think. It now appears that the ruling may ban the paying of freight to destination, in addition to the basing point system. If we are compelled to do all our buying on an f.o.b. factory basis, it would at once present the problem of securing all requirements from nearby producers in order to save freight. The various decisions and I.C.C. rul-

ings are confusing, but they demand our careful attention.

Let me emphasize again that the present-day buyer should be classed as a top executive, and should be in daily conference with the management and all branches of the business, as so much depends on his knowledge of the details of production and marketing. He should work closely with both the production and selling ends of the business, where he can ask for and obtain the information he should have for doing his own work with greatest efficiency.

The Problem of Inflation

Our most immediate domestic problem is inflation. The question uppermost in the minds of our businessmen is whether we are heading for deflation or whether inflation will continue to thrive through Government support and the enormous supply of money now in the hands of a section of the buying public.

Production is about at its all-time high; there is little chance that it could be increased to any great extent with our present plant and equipment and the 40-hour week. Consumption is also at an all-time high, because there are still enough people who have the money and are willing to pay the higher and higher prices demanded.

So long as this situation prevails, we may look for a continuation of the boom. But there are signs that all is not well from the manufacturers' standpoint. Our enormous capacity to produce, encouraged by an apparently inexhaustible market for our goods, has finally resulted in our being able to satisfy demand for a large majority of the items we make—at present price levels.

We should not lose sight of the fact that the desire to acquire is practically inexhaustible. Everybody would like to have all the good things of life, and the only reason

they do not have them is because they haven't money enough to pay for them.

Manifestly, if we were to reduce prices, our markets would expand in like proportion. Ordinarily, that would be the obvious thing to do. But prices would have to be reduced substantially to assure widespread distribution, because only those of substantial income or receiving high rates of pay could be lured to increase their purchases on merely moderate declines. The vast bulk of the people—those in the lower income brackets, or living on pensions or on interest from investments—could not or would not purchase luxuries and semi-luxuries unless prices were really attractive.

To reduce prices substantially at the present time would mean inventory losses which many could not stand and still remain in business. So we find those whose goods are backing up on them are embarking on high-pressure sales campaigns—offering concessions such as long-term credit, etc., in order to move their goods. In most cases where direct price concessions are made, the reasons ascribed might be open to question. The sudden discovery that wage boosts and increased costs can be absorbed out of profits is generally prompted by the discovery that sales have substantially declined.

Situations of this sort have already arisen on a variety of items, both industrial and consumer goods. It will also be noted that the usual fall pick-up after Labor Day has not occurred this year.

All this adds up to the fact that, at present price levels, we are over-producing, building up high-cost inventories, and are left with a potential consumer market consisting of only a small percentage of our population, made up mostly of high-paid labor.

N.A.P.A. President Ralph Keef-
er, Conference
Chairman Clif
Rehse, and Dis-
trict Vice Presi-
dent Lee Clayton
at the luncheon
session.





Dayton delegates at the conference.
Seated: E. J. Thum, E. G. Sander, J. F. Murray, R. O. Long.
Standing: Howard A. Heck, Wilfred J. Walter, E. W. Bozarth, H. L. Williams, and Ted Dimke.

This is a very dangerous situation, for industry will soon find it impossible to continue carrying topheavy, high-cost inventories which it is unable to move without substantial loss. The time has arrived when most all of us will have to devise means for moving our goods into consumption, or we will have to close down. We cannot continue on a basis of constantly submitting to increasing costs, then raising our prices, which still further curtails our markets.

Under ordinary conditions, we could rightfully look for a sharp recession in the near future. However, these are not ordinary times that we are living in. They are extraordinary. The policy of our Government for the past 16 years has been based on cheapening our money; in other words, money inflation. This policy is still in effect. Lenin said that the surest and easiest way to ruin a middle-class society was through inflation of its currency. Lenin was absolutely right. When inflation takes place, money loses its purchasing power; wages build up to improper levels; waste and extravagance appear; high, unearned salaries are the order of the day; prices are forced up to levels beyond the ability of the masses to maintain a reasonable standard of living.

Engineer a Recession

The policy of tax, tax—give, give—the squandering of our resources and the feeding of inflation with watered currency—is still with us. We have now reached a point in the present inflation where it is doubtful if it can be checked without a total collapse of our entire economy. To my way of thinking, therefore, everything should be done to engineer a recession at once, as the only way to save our system of free enterprise.

To my mind, the only way to safely cure a situation which has progressed

to such an extreme point as has our present inflation, is through a recession or sharp readjustment of our affairs, bringing us back to a level low enough to assure stability and provide a new platform on which we can safely rebuild.

This can only be accomplished through the will of the majority of the people of the country. If people refuse to submit to readjustment, if they demand more and more inflation, higher and higher wages, shorter and shorter hours, less and less work, then the only way to obtain this is through the socialization of industry under a dictatorship. A free economy could not meet such conditions. Industry could not function under such a set-up.

We have an exact example of this in France today. The people refused to submit to a readjustment of their economy when they had the chance. They demanded more pay for shorter hours, lower prices for what they bought, cheap money and lots of it. They got what they asked for, and along with it the socialization of their industries, virtual dictatorship, their body politic split up into a dozen different pressure groups, all pulling in opposite directions. Their money has lost value until today it has only one one-hundredth of its original purchasing power. Capital, savings, and insurance have been wiped out. Everyone must look to the Government for what they get. France has become a pauper nation, kept on its feet through American charity.

You may say that this couldn't happen here. Don't fool yourself. It has been happening progressively during the past 16 years; it is happening today. Our people are being robbed of their wealth and savings. The dollar has depreciated to a present buying power of only 30 to 50 cents, depending on what you buy.

The value of our money is daily becoming less and less. As a consequence, many are cashing their Government bonds, allowing their insurance to lapse, drawing out their savings to invest their money in something real before it still further loses value.

What would be best for our country? Should we have a recession, or should we allow the money inflation to run its course? Which course would be the least painful? The answer seems obvious.

If we had a severe recession, carrying prices down, say, 25% to 30%, a lot of weak institutions would go broke. There would be quite some unemployment. The concerns which survived would have the water squeezed out of them; their extravagances would be eliminated; most of the overpaid management would be brought down to a value-received basis; labor would abandon its don't-give-a-damn attitude, would try to earn what it was being paid.

High-cost inventories would be revalued—a painful operation. Prices might be reduced, say 25% on an average. But it would not all be loss, by any means, for our money would automatically increase in value by the same proportion, so that what you had left after the storm would be worth more.

Our costs of doing business would be greatly reduced, efficiency increased. Millions of low-income people would once more be in a position to re-enter our markets, which would supply added demand for our goods. We would have created a safe price platform on which to rebuild. These are all tangible advantages to be gained through a recession, painful as it would be to some.

It resolves itself into the simple question: Are we prepared to take a partial loss now and save our American economy, or are we going to insist on continuing the inflation and take a total loss under a socialized state?

My own notion is that our people are becoming awake to the dangers involved in allowing the inflation to further expand; that they will force a recession through refusing to pay current high prices.

As to the timing of a possible recession, this is anybody's guess. But if the present trends in consumer resistance develop, as I believe they will, then we might actually consider that a recession has already begun, even though we are riding the crest of the boom.

The Techniques of Cost Reduction

By Victor G. Lottmann

Director, Purchasing Research Department
Ford Motor Company
Dearborn, Michigan

Cost reduction studies are concentrated in those areas where greatest possibilities exist.

Suppliers are invited to participate in detailed analysis of purchased parts and costs.

Many economies are effected by better methods of materials handling and shipping.



Victor Lottmann explains how Ford's purchasing department analyzes products to achieve lower costs.

WEALTH is made up of goods and services. Money and credits are simply tools to facilitate the exchange of those goods and services. Increased production, at higher levels of efficiency, of all of the materials used in our daily business and personal living, is the only solution to improving our country's real income.

We are particularly serious proponents of that principle at Ford. Not only has the history of our company been directly associated with mass production, but we are especially concerned with increased production at lower and lower costs. This

permits greater employment of people and wider distribution of our products. The long-term trend of our industry's employment of people is well known to all of you. The trend of product distribution can be seen quickly when we remember that there were 28 passenger cars in use for every 100 families in this country in 1919, compared with 83 cars for every 100 families at the beginning of World War II. And these 83 families are riding in substantially improved products, over the ones they drove twenty years ago.

In our view, there are two major aspects to cost reduction. The first is broad analysis of our overall performance to determine specific areas where possibilities of cost reduction exist. The second is detailed analysis of specific parts or assemblies.

To assist in organization of activities and to assure a systematic cost reduction program, we established a Cost Review Committee in Purchasing. This committee was organized for the purpose of making parts costs comparisons, reviewing all requests for major price increases, and making recommendations on materials substitutions, product design, and other specific methods of cost reduction. It performs the broad function of overall review of purchasing performance.

This committee is made up of our General Purchasing Agent, the purchasing agents of our commodity buying departments at Ford and at the Lincoln-Mercury Division, and myself as Director of Purchasing Research. A formal agenda is prepared each week prior to the meeting. Items for discussion are secured from each member, and product reviews are scheduled. Meetings are held each Monday afternoon, and usually require one hour and a half.

Typical of the problems and projects under discussion by the committee during the last several months are (1) substitution of materials for steel, (2) a study of conversion costs for steel incurred by suppliers, (3) possible changes on specific Ford and Mercury parts, (4) effect of freight rate increases on Ford purchase prices, (5) the effect of elimination of basing point pricing, and (6) requests for retroactive price increases.

Several months ago this committee approved the formation of a sub-committee, made up of several technical men in Purchasing. These men assist the purchasing agents and buyers in the leg work, plant work, and other similar jobs relating to ideas from Purchasing people for cost reduction on all car and truck lines. The sub-committee is established as a service group to all of Purchasing. It acts as a focal point for reports to the Cost Review Committee on cost reduction resulting from product changes or materials substitutions.

The Cost Review Committee carries on a systematic review of our bill of materials to determine specific parts to be analyzed. For example, we recently made a study of the driver's cab and front-end parts (exclusive of the engine) on the Ford truck. At the beginning of such a study, each purchasing agent involved will request his buyers to bring their parts into a central display room. The parts are laid out in commodity classifications, numbered and tagged with identifying information. A date is set for the formal presentation of their parts by each buying group. Customarily these presentations are no longer than one hour and a half at a time.

In the case of the Ford truck study, we devoted one original meeting to the driver's cab and its components,

Address at the second annual conference of District No. 6, N.A.P.A., Cincinnati, September 27, 1948.



B. D. Henderson,
Chairman of the
Cost Reduction
Forum, with **Burt**
Lang of Toledo
and **Ted Dimke** of
Dayton.

and another to the hood, fenders, grille, and other front-end parts. The first meetings are usually attended only by our purchasing agents, their purchase analysts, and several members of the Purchasing Research Department. Either the purchasing agent or his analyst gives the group prepared comments on each part, together with a detailed schedule of price, specifications, changes from previous model, and related facts. Those parts which carry particular cost reduction possibilities are discussed in detail, first by those responsible for their procurement. These ideas are reviewed by the group and expanded upon, if possible. The group, in turn, may observe opportunities for cost reduction during this first review. All ideas are noted, and each purchase analyst, together with a special group located in the Purchasing Research Department, has the responsibility of following through with our buyers, our suppliers, and our Engineering Department.

After the original small meetings with the purchasing agents, each commodity buying group visits the display room and studies the project with the same objectives. All of the ideas developed in their reviews are also channeled through the analyst and Purchasing Research specialists for follow-through. This approach is not only systematic and thorough, but it encourages friendly competition among our buyers, their analysts, and the entire purchasing organization.

The follow-through work involves conferences with our Engineering Division to determine the reasonableness of design changes or materials substitutions. It also involves review with our suppliers as to the possibilities of making the change promptly, and without obsolescence of parts already in production. These projects are numbered and carried through to

conclusion. They are either adopted or vetoed. An interesting observation is that often you will find a project which has been vetoed can be revived and accomplished after being tabled for a period of time. New ideas frequently need a seasoning period before they can be applied.

As a further means of finding cost reduction possibilities we encourage suggestions from suppliers. Sincere invitations to suppliers for product and design recommendations are always well received and usually very productive of results. We believe we are not performing our best buying function if we don't invite these recommendations. Joint engineering and product work with suppliers is a basic principle in good buying.

Another broad technique which we use to determine cost reduction possibilities is comparison of our purchase price trends with market price trends. These comparisons help us to determine whether Ford prices are advancing or declining at the same, greater, or a lesser rate than the general level of industrial prices. Our Purchasing Research Department computes indexes of purchase prices for detailed groups of materials in all of our car and truck lines. These are compared with general market price indexes.

There are three major steps in the development of our purchased materials price index. First is the selection of a representative sample of items. It is necessary to select those items whose prices will adequately represent movement of all prices within a group or commodity department. Consideration is given to total dollar value of the sample, with the intent that approximately 75 to 80% of total materials be included. The second step is the tabulation of current prices, and third is the computation of the index. The current price for each month is expressed as a per-

centage of the base period price. These percentage changes are derived for major groups and sub-groups of commodities.

We have not found any of the published Bureau of Labor Statistics composite price indexes satisfactory measures of general market prices for comparison with our Ford price indexes. We have developed an index using selected B.L.S. prices weighted according to our bill of materials. The general classification of commodities included in this market index, and the percent which each group is of the total is as follows:

1. Fabricated Iron & Steel Products	42.3%
2. Tires and Tubes & Other Rubber Products	15.5
3. Non-ferrous Metals	14.3
4. Textile and Paper Products	12.5
5. Steel Mill Products	6.8
6. Glass, Paint, and Chemicals	5.2
7. Iron and Steel Castings and Forgings	3.4
Total	100.0%

One problem in compiling an index of this type is making proper allowance for such costs as steel extras, and other pertinent detail which may affect prices from one period to another.

To help our purchasing agents keep informed on day-to-day price changes, we issue a daily price card each morning showing the prices of selected commodities. In addition to this, prices on selected commodities are charted by months for the past 20 years. Photostat copies of these are furnished our purchasing agents, and are brought to date periodically. Daily, weekly, and monthly charts on prices, production, consumption, new orders, and other economic factors are kept to date by the Purchasing Research Department, and are used in discussions with our buyers and purchasing agents.

After we have localized possible cost reduction ideas to a specific part or assembly, we make a detailed cost analysis study. This is the real heart of cost reduction work.

The first step is to make competitive price comparisons. We prepare an historical record of prices charged by the supplier. These prices are obtained from our files of purchase orders. In making price comparisons, the dollar price alone is not the only factor taken into consideration. Variations and tolerances permitted in specifications must be evaluated to determine if any significant differences exist between suppliers which

might reflect in production cost. If significant differences are possible within specifications, a physical inspection of the products is made by the analyst.

In addition, consider the following factors which may make a lower price from Supplier A less desirable than a higher price from Supplier B. (1) Supplier A may require tooling which may be amortized at a certain cost per unit, compared with B who requires no new tooling, (2) if new designs are being considered, A's product may cost more installed on the car than B's, and (3) consideration should be given to the supplier's past pricing policy. Supplier A may have made sales at a low price and then attempted to increase his prices after some production. This may be due to poor cost estimating, or to an attempt to cover himself whenever wages increase, or simply a method of obtaining new business. On the other hand, Supplier B may be one who stands by his original commitment. Other factors to be considered are whether wages and materials price increases are included, competitive position of the supplier in the market, relative productivity, delivery performance, and the long-time trend of prices of each supplier.

Analysis of Cost

A detailed analysis of the basic elements of cost follows our check of comparative prices. These elements are (1) material, (2) labor, (3) engineering expense, (4) tooling, and (5) administrative and general expenses. It is not always an easy task to secure cost data from a supplier, and without this information cost studies must be imputed. Material costs may be based on market trends, and labor and burden data, or experience with similar plants. However, if a supplier understands that this cost information is requested to help him reduce his costs, and not for the purpose of reducing reasonable profits, he is usually agreeable to furnishing this information.

We also use our central cost estimating department to help us appraise competitive bids and cost breakdowns. This department furnishes us with expert estimates of all areas of cost.

A typical cooperative cost study with a supplier might begin with a conference held between our supplier's representatives, our buyer and our purchasing agent. These meetings frequently develop following a request for a price change. They may also develop as a result of a cost study which we initiate. What-

ever the cause, the type of information developed usually follows a common pattern.

Materials, direct labor, and factory burden are listed. Visits have usually been made to the supplier's plant so that operating practices are understood by the buyer and the purchase analyst. If our company manufactures the same item, we secure Ford costs for comparison. If the study involves a major product, we may even get down to detailed reviews of specific operations. Manufacturing and engineering specialists from our company and the supplier company are frequently consulted. Important cost reduction changes in techniques and operations often develop.

I have made the observation several times in our staff meetings that I believe every one of these investigations has always resulted in constructive progress on the product. This development of better operating methods is reflected in more detailed appreciation of the mutual benefits of cost reduction, and in many other ways.

Recently, a study initiated at our company established a new flow of information between a long standing supplier and ourselves. We had purchased this company's assembly of a machined part for many years. Now we were taking a look at detailed costs of the components of a similar assembly manufactured at the Rouge plant. We invited our supplier to study these costs with us in comparison with his. But the supplier had never furnished any of his customers with detailed costs on component pieces. After we demonstrated successfully to the President of the company that we were going to reach some definite conclusions regarding "make or buy", he volunteered to personally present his detailed costs. We had present at this meeting our purchasing agent, his buyer, the head

of our cost estimating department, and myself. After a review of detailed costs, we visited a display of each individual component purchased part laid out along side comparable parts in the Ford assembly.

This display permitted physical examination of comparable parts purchased by the supplier and purchased by Ford. Several parts were being purchased by us at savings under the supplier's cost. His purchasing people will receive help from ours to accomplish similar savings. In addition, the physical review enabled the technical people who were present to evaluate cost differences resulting from size, shape, weight, machining, and other aspects of each part. The supplier company's President suggested that his chief product engineer visit the display and work with our engineers on product ideas. This study has been started and is producing desirable results.

At the conclusion of this study, wherein detailed parts costs were compared, it was found that approximately \$1.60 could be saved in procurement of supplier parts for the assembly. It was also determined that the balance of his operations supported his costs. Incidentally, our supplier voluntarily furnished the complete elements of cost of sales, including administrative and selling expenses, tool amortization charges, as well as materials, labor, and burden costs.

This kind of mutual understanding certainly brings increasing appreciation of cost reduction programs between our suppliers and ourselves.

Just the other day, one of our purchasing agents requested detail to support a request from another supplier for a 2½ cent price increase. Our engineering specifications had been changed, adding one-quarter of a pound of material to the part. Upon

(Please turn to page 322)



D. F. Kigar of Detroit Edison Company (center) with Paul S. Forward and W. D. Kimmell of Cleveland.

A Sound Approach to Cost Reduction Problems

● **By M. E. Carlisle**
General Purchasing Agent
Pittsburgh Plate Glass Company
Pittsburgh, Penna.

COSTS, like the weather, always seem to be a problem. The weather is usually too hot or too cold, too dry or too wet—and costs are either too low or too high. Costs are also like the weather in that everyone seems to talk about them, but (with apologies to Mark Twain) no one seems to do much about them.

The very worthy purpose of this meeting is to continue to talk about costs and, if possible, *do something* about them. Economists can (and will, with the slightest encouragement) display and elucidate upon voluminous statistics prepared to show what costs are and how they are influenced by supply and demand, flood and drought, inflation and depression, Republicans and Democrats, sun spots and the World Series. I have no quarrel with these economist fellows other than that they are too academic for me. I cannot find a horse on their merry-go-round upon which I can ride through a business day, knowing that by the sheer weight of statistics alone I will come out at the right place.

It is to be conceded that some of our cost problems might be solved by simple arithmetic procedures, but I believe that our cost problems of today are not so much problems of business mechanics as they are problems of business philosophy.

Our personal and business lives today are so beset with complex and hysterical influences that we apparently no longer live by logic and good judgment, but rather by expediency alone. Today seems to be the era of the opportunist rather than of the long range thinker. Our National Government, for instance, which should be the Gibraltar of logic, sound thinking and vision, appears to be merely trying to satisfy immediate situations rather than expend

Address at the second annual conference at District No. 6, N.A.P.A., Cincinnati, September 27, 1948.

Cost problems involve our basic business philosophy, not the mechanics alone.

Opportunism blinds us to logical, long range thinking and action.

Purchasing agents are in a key position to coordinate cost reduction efforts.



M. E. Carlisle stresses teamwork with other departments as essential to an effective cost reduction program. J. D. Hogg, at right, also warned against being too much concerned with who gets the credit.

the brain power and take the courageous actions necessary to give us the strong policies so badly needed at this time. Our Government seems to be trying to satisfy pressure groups by passing certain legislation, and when this results in inequities, they try to correct their mistakes by passing more legislation. Consider the hodge podge involving price supports, tariffs, farm subsidies, international allocations and, for that matter, the whole international situation in general. Perhaps I'm not smart enough to understand, but I can't see very much that our Government is doing which reflects logic and sound thinking. I am afraid governmental policy makers are being influenced just a little wee bit by an expedient known as the ballot box.

The policies of some labor leaders are equally short-sighted. Their policy seems to be—get all that you can while the getting is good, produce as little as possible, and to hell with tomorrow. If these labor leaders are acquainted with the principles of sound economics they certainly do not show it. Their continual gripe is that prices are too high and they must have more money to combat these high prices, all of which results in still higher prices. They seem to choose to ignore the fact that prices, which they complain about so bitterly, are largely affected by cost, and, as we all know, labor is the largest single item in cost today. Why doesn't labor help itself by reducing prices by reducing costs by increasing produc-

(Please turn to page 324)

Can OVERTIME COSTS Be Eliminated?

Industry's drive to cut costs to meet new competitive conditions has focussed considerable attention on overtime work, and such fundamental questions as productivity and labor-management relationships that are directly associated with it. This month we have asked a cross-section of purchasing executives in all parts of the country for their views on the present status of overtime work, its future, and its effects on costs. Their combined opinions, with representative individual comments, follow.

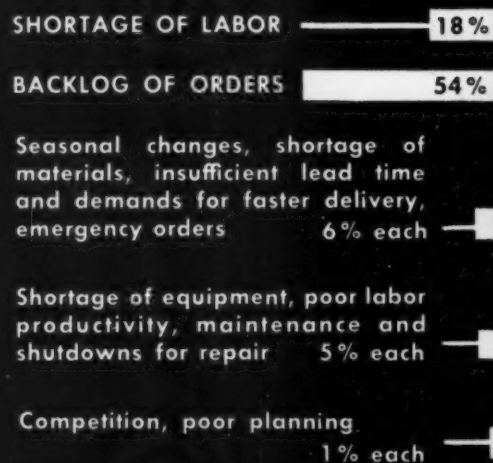
① Does the present production schedule of your company involve any considerable amount of overtime work at premium rates?



② Are you accepting overtime work charges from your suppliers?



③ Do you consider the overtime situation in your industry is due to:
a. shortage of labor
b. backlog of orders
c. other reasons



*Some respondents listed more than one item on this question, so percentage factors total more than 100

④ How long do you think the condition will last ?

6 MONTHS 36%

1 YEAR 27%

LONGER 37%

⑤ Do you believe that the elimination of overtime would materially reduce the cost of your finished product and the products you buy ?

YES 60%

NO 40%

⑥ Has productivity per man hour in your industry increased, decreased or remained about the same, compared with 1946 ?

INCREASED 44%

DECREASED 13%

ABOUT THE SAME 43%

WHAT THEY SAY

"If we eliminated overtime pay, it would be necessary to adjust our hourly pay rate so that the take-home pay was about the same, or lose a lot of good men."

"We run our extra shifts to avoid building and equipment investment, which run to \$200,000 and \$85,000 respectively."

"Only sure way to eliminate overtime is repeal present 40-hour week to read 48 hours."

"Manpower shortage in 1947 caused a heavy overtime schedule which proved expensive. In 1948, only a slightly larger crew has produced a much larger amount of goods, at a considerably lower cost."

"Much overtime is due to material shortage, which results in constantly upset schedules and delays in production."

"Productivity has increased due solely to increased mechanization. Where no increased mechanization is involved, productivity has remained constant."

"We work 45 hours—5 hours overtime. Overtime not necessary for production, but a means of keeping weekly pay up. Increase of productivity due to new equipment."

"Does reduction of overtime reduce cost? Actually a business bases its forecast of cost on a division of the standard or fixed charges over 40 hours a week. If a 50-hour week is worked, a 25% reduction of fixed charges, including administration, sales, etc., is effected. Or, to state another angle, 10 hours are added to the week at a cost only of the overtime premium plus direct operation expense."

"Increase in productivity due mostly to inauguration of an incentive system since 1946."

The Use of Oxygen in the Manufacture of Iron and Steel

Steel making capacity can be increased by speed-up as well as by expansion.

A new commodity—tonnage oxygen—must be made available for the process.

Development work has been rapid, but its industry-wide application will take time.

●
By Dr. George V. Slottman

Technical Assistant to Vice President
Air Reduction Company
New York



G. V. Slottman

NO technical development has so suddenly and completely monopolized the attention of steel producers as has the introduction of oxygen for increasing the firing rate and for speeding-up the steel making reactions in the open hearth furnace. The fact that the output of existing steel making furnaces could be increased from 10% to 50% by the simple introduction of an oxygen pipe below the fuel oil port and by the use of a bare iron pipe for injecting oxygen directly into the steel bath, burst like a bombshell over the steel industry. Barely two years have elapsed since the summer of 1946, which saw the first experimental uses of these new processes in Canada and the United States. In the intervening time, every major steel company in this country has conducted extensive test programs at very considerable expense, applying these techniques to its production problems.

Hailed by steel industry spokesmen as the greatest advance in the steel making process since its development by Siemens in the 1860's, oxygen appeared at first glance to be the answer to the problem of increasing steel making capacity. Spurred on by the pressure for steel, the industry embarked on a veritable "oxygen

rush", with oxygen being sprayed in and around the furnaces as freely as compressed air. It is to the credit of the steel industry, and a reflection of its desire to cope with a serious production problem, that these experiments were made on a scale—and with an industry-wide scope—which finds few parallels in the field of technical research and development.

Having been intimately associated with the conception and application of these new processes, this enthusiasm on the part of steel makers has given me great pleasure and has lightened the task usually connected with the promotion of a new idea. On the other hand, an enthusiasm generated by the exigencies of the moment can frequently be harmful to the future development of a process. An "oxygen hangover" could be as devastating to the orderly progress of oxygen in the steel industry as its alcoholic counterpart is in the human individual. It is for this reason that I shall briefly review the past history of oxygen in steel making and attempt to analyze the present and future trends as realistically as possible.

The Older Processes

Oxygen is no stranger to the production problems of the steel industry. As a matter of fact, the earliest recorded commercial use of oxygen, in the 1890's, was for opening the tap holes of iron and steel making fur-

naces. This early association has flourished through the years, and process development in oxygen applications has solved many of the steel manufacturing problems and has materially assisted in building markets for its products.

One need only think of the field of welded fabrication to realize the importance of the oxygen cutting torch and the oxy-acetylene cutting machine in determining the market for rolled steel plate. Similar uses of the oxygen cutting technique in scrapping steel and in severing heavy sections in the mill have solved many steel mill problems. The entire technique of conditioning the surface of the raw steel during manufacture was revolutionized in the early 1930's by the development of the scarfing process using oxygen torches to replace pneumatic chisels. Present surface quality standards would be unobtainable at present high production rates without the continuing developments of the technicians of the oxygen industry.

The effects of these developments have been reflected in the sales curve of the oxygen industry, which shows a twenty-fold increase from 1919 to 1943, the peak war year. The consumption of oxygen increased some four-fold from the peak prewar year to the year 1943, in which 20.5 billion cubic feet—or 800,000 net tons of oxygen—were consumed. The abil-

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ity of the oxygen industry to meet this wartime demand counted heavily in meeting the unprecedented demand for fabricated steel products.

**Yearly Oxygen Consumption
(Billions of Cubic Feet)**

1919	1.17	1937	4.44
1921	1.06	1939	4.56
1923	2.06	1941	7.18
1925	2.07	1942	14.99
1927	2.36	1943	20.48
1929	3.14	1944	18.74
1931	2.05	1945	13.93
1933	1.82	1946	10.87
1935	2.68	1947	13.77

Since the time of Priestley, who in 1774 discovered that combustibles burned faster in oxygen than in air, much thought has been given to using oxygen in metallurgical furnaces. The patent literature of the middle 1800's is full of references to its use in the blast furnace, the Bessemer, and wherever fuels or elements were being oxidized with air. In 1924, a symposium of metallurgists, under the auspices of the Bureau of Mines, critically examined the various suggested uses of oxygen and prepared an elaborate report of its findings. From this report it could be inferred that oxygen would have to be available in a volume and at a cost which appeared beyond the reach of the then existing oxygen-producing processes.

The first significant step toward making a fact out of these metallurgical fancies was taken in Germany in the early 1930's and involved an improvement in the oxygen-making technique by Frankl, which facilitated oxygen production on a large scale. Under the pressure of a wartime economy, some eighty plants were built in Germany during the 1930's, making up to seventy-five tons of oxygen per day in single units. These plants were used largely in synthetic gas and oil production. Some small scale blast furnace tests were made using oxygenated air, and the operation of several Bessemer plants on oxygenated air appears to have been a commercial practice.

The first experiment designed to test this new oxygen-producing technique, and the use of the oxygen thus produced in metallurgical operations in this country, was started early in 1946. In a cooperative venture of the Bethlehem Steel Company, the Koppers Company, and the Air Reduction Company, oxygen was to be produced at the rate of 130 tons per

day and was to be used for enriching the blast of a standard blast furnace. This plant is about to be placed in operation, and it is hoped that increases in the rate of production of iron, together with other operating economies, will justify the use of oxygen on a large scale for blast enrichment. Should this prove true, a market for a new commodity—tonnage oxygen—will have been created in the steel industry.

Tonnage Oxygen

As purchasers of materials, you will be interested in this new commodity "tonnage oxygen" and in a comparison with the type of oxygen now available in cylinders, bulk trailer truck, or in liquid form. Tonnage oxygen, as the name implies, means oxygen in tons rather than in cubic feet. While most applications of "tonnage" oxygen for combustion purposes can use oxygen of lower than 99.5% purity, the criterion for a tonnage oxygen application is the volume required and not the purity. A minimum daily consumption of seventy-five tons, or some 1,800,000 cubic feet, ranging upward to plants producing two thousand tons, or some 50,000,000 cubic feet, is projected as the field of application of this commodity. Since cost of production falls rapidly with increasing size, "tonnage" oxygen prices ranging from five to ten dollars per ton appear to be obtainable in plants of very large capacity.

Such plants would generally be located at the point of use, although it would not be entirely romancing to look forward perhaps twenty years to a Public Utility type of distribution by pipe line from centrally located plants of say 20,000 tons per day capacity. However, since there are no tonnage plants in commercial operation in this country today, it is drawing a long bow to attempt to predict the course of development of this new industry. Judging from the record of all new developments, it will not be without its birth pains.

In considering "tonnage" oxygen, it is important to remember that it is size alone that differentiates this application from the present oxygen of commerce. A moderate requirement for oxygen, whether of high or low purity, is best met by the purchase of oxygen as presently available. Another important consideration is that there are only six tonnage oxygen plants presently building in this country and that anything approaching what might be called "operating data" on these plants will not be available for at least six to twelve months. Any

thought that "tonnage" oxygen will alleviate the present steel shortage is obviously unsound.

The orderly development of the "tonnage" oxygen application to the blast furnace was suddenly overshadowed in the summer of 1946 by the development of new oxygen uses in the open hearth. As a result of cooperative experiments of the Air Reduction Company with Canadian Liquid Air Company and the Steel Company of Canada, involving the use of oxygen as a combustion aid—and with the Allegheny Ludlum Steel Company, involving the use of oxygen in the steel making reactions of the bath—attention was focused on the possibility of increasing steel making capacity in open hearth and electric furnaces.

Using commercial high purity oxygen, large-scale experiments were made covering the following lines of research:

- (1) Oxygen as a combustion aid during scrap melt-down.
- (2) Oxygen as a means of melting scrap by direct oxidation.
- (3) Oxygen as a means of Bessemerizing heats containing high hot metal charges.
- (4) Oxygen for controlling bath temperature.
- (5) Oxygen for the decarburization of low carbon heats.

Sufficient experience was quickly gained to indicate that oxygen, when applied to a single furnace unit, will materially increase the production rate. Many hasty conclusions have been drawn from this evidence with regard to the effect of oxygen by itself on an entire plant output or even on the nation's steel making capacity.

Effect on Steel Making Capacity

The question uppermost in your minds is naturally: "What effect has all this work had on steel making capacity and on the supply of steel available in the market?" An off-hand answer would be: "Very little." A truer answer would be that sufficient data are not available to permit of assessing the effect. The steel industry is now operating at an all-peace-time high, although beset by scrap shortages, deteriorating coke, ore, scrap, and other raw material quality. Oxygen may be assisting in holding this rate in the face of material deficiencies which would, in effect, represent an over-all gain in production due to the use of oxygen.

Considering the large number of variables involved in determining steel output, the following opinion, which I prepared some time ago for

the Iron and Steel Institute, is probably not far wide of the mark:

"From a practical point of view, it has become apparent that increasing the steel melting or decarburizing rates with oxygen is only part of the story of increased steel production. Aside from economic considerations involving comparisons of the cost of oxygen with possible cost savings in steel making, there are limiting factors present in each plant which restrict the immediate application of oxygen. The principal factor is the general inability to handle and to charge scrap at the accelerated rate required for oxygen firing. Major changes in scrap handling facilities involving large capital expenditures will be required.

"With regard to the availability of oxygen, it is apparent that for combustion uses oxygen is required in such quantities and at prices which, in effect, constitute the development and manufacture of a new commodity—large scale "tonnage" oxygen. A simple calculation of the quantity of oxygen required to employ oxygenated combustions for present steel production indicates a yearly oxygen requirement at three times the present annual capacity of all American oxygen-producing plants. While development work in the manufacture of this new commodity is well under way, with the first commercial experimental plant starting operation at the Bethlehem Steel Company's Johnstown Plant, estimates of the time required to duplicate such facilities are of the order of 18 to 24 months.

"It is thus evident that what has been accomplished during the past year in the experimental use of oxygen in steel making has been a determination of, rather than a solution of, the problems involved in this application. Such problems include ques-

tions of materials handling, of oxygen supply, of smoke and fume nuisances, and of the fundamental economics involved. With the exception of the use of oxygen for decarburization in the electric furnace and in the manufacture of such specialty products as very low carbon steels, both of which applications involve relatively low tonnages of steel and oxygen, the production use presently being made of oxygen has had little effect on steel making capacity. Despite the wide publicity being given the experimental use of oxygen in steel making, it must be borne in mind that a substantial increase in the rate of steel production through the use of oxygen can only be obtained by major alterations to existing furnace plants and by the construction of oxygen-producing facilities—both of which projects will require considerable time.

"With regard to the use of oxygen in the Bessemer, the cupola and the blast furnace, plant development work is just starting, and no significant data have been gathered which would permit of drawing any conclusions as to the extent of the future application of oxygen in these processes."

Future Development

The development work of the past two years, while not answering the complicated steel production problem, has certainly been of far-reaching significance to future metallurgical thinking. The use of oxygen in the steel industry had graduated from the "talking" to the "doing" stage. Hundreds of steel plant operators have gotten the feel of this new tool and have learned how to handle it with complete safety. Tons of gaseous oxygen are added to the steel bath by the operating personnel, in

routine fashion, and with no more concern than when adding iron ore. The large mass of practical "know-how", which has thus been accumulated, makes it possible for metallurgical engineers to think in terms of oxygen applications with confidence that the furnace operator can put them into practice.

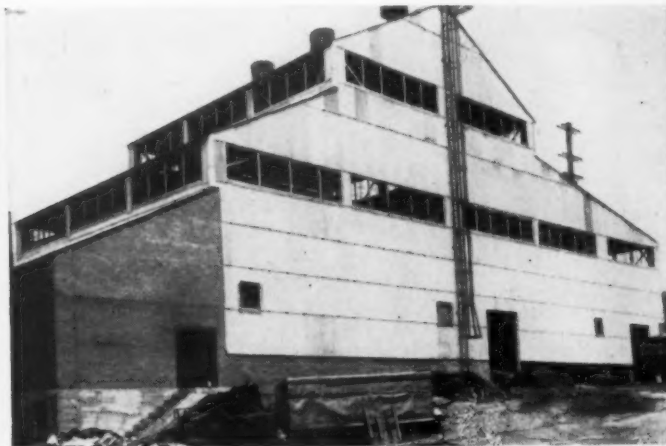
Attention has been focused on the known deficiencies of our present iron and steel making processes—on the blast furnace with its high capital cost per ton of output, on the open hearth with its low rate of melting and refining, on the Bessemer with its inability to handle substantial quantities of scrap, and on the foundry cupola with its fluctuating metal quality. Oxygen will certainly provide some of the answers to many of these problems and should help the steel industry toward its goal of providing larger supplies of higher quality products.

To attempt to predict the timing of these developments would require an omniscience beyond the power of man. We are dealing with a new industry—tonnage oxygen—which has yet to prove itself under American conditions. We are talking about applications of this industry's products to the complex structure of the modern integrated steel plant with its larger number of separate operations, each mutually interdependent in the production of the finished product. It would be my guess that, barring unforeseen emergencies, the development of oxygen usage on a large scale in the iron and steel industry will be a slow progression over the years, requiring an economic justification of each forward step taken. The tremendous capital investment involved in any alterations in steel plant facilities would appear to make such a prediction a certainty.

Injecting oxygen into the molten steel bath.



The first American tonnage oxygen plant is now nearing completion at Johnstown, Penna.



The Outlook for Basic Chemicals

By Clayton A. Wolfe

Vice President and
Director of Purchases and Traffic
Monsanto Chemical Company, Saint Louis

Chemical industry is expanding rapidly, with new developments and new uses.

New peaks of production are closing the gap between supply and demand.

Basic source of raw materials sought in the by-products of petroleum.

ESTIMATED sales of chemical products during the first six months of 1948 reached an all-time high of about 4½ billion dollars, an increase of about 20% over the same period of 1947. Some of this increase was due to higher prices, greatly expanded plant capacities, and new products developed by research.

Hundreds of millions of dollars were and are still being spent for new plants and increased production, making possible still greater output. It is reasonable to assume that the gap between supply and demand of chemical raw materials is rapidly closing. The sellers' market on these materials would have been over sooner had there been fewer strikes and more will to work.

Now that we are catching up on supplies, it should also mean approaching equilibrium in prices, or possibly a downward trend. But there are other factors that affect us in procurement—the Marshall Plan, Government stockpiling, military purchases, freight rates and basing points, large farm crops, inventories and their valuation.

Address at the second annual conference of District No. 6, N.A.P.A., Cincinnati, September 28, 1948.

Alkalies. Caustic soda production in 1947 was approximately 2,000,000 tons. In 1948 it should reach 2,800,000 tons. This increase is entirely due to expansion of capacities, and there are several new units still under construction. Currently, caustic soda is in ample supply, except possibly in the solid form. Supplies in the future look to be ample.

Chlorine. Production has increased in approximately the same ratio as caustic soda. Supplies are ample and, provided they do not get out of balance—i.e., the demand for one become greater than for the other—there should be no nearby problem on this item.

Soda Ash. Production in 1947 was approximately 4,800,000 tons. The 1948 production is estimated at 5,200,000 tons. While currently in ample supply, soda ash could again become short if consuming industries operate at maximum capacity.

Coal Tar Chemicals. We have an unusual situation here in that greater production does not appear possible. It is true that some new coke ovens are being built and have been built, but these have been mostly replacements. Some slight increase in these items may be possible by more effi-

cient operation of the new ovens.

Benzol. The current annual production of approximately 150,000,000 gallons of pure benzol a year is barely equal to the demand. Any increase in use will make benzol short and substitutions might be necessary where possible. Prewar, 80% to 90% of all benzol produced was sold as motor benzol. Today the ratio is in reverse. Tremendous quantities are being used for the production of chlorinated benzol, aniline oil, phenol, styrene, and nylon. Chemical growth cannot be halted, and additional benzol needed for new development will have to come from the petroleum industry. This is possible, but at considerably higher cost.

Toluol. There should be no shortages other than temporary ones, as large quantities can be produced by the petroleum companies.

Naphthalene. With the enormous wartime expansion in production of items like beta naphthol, H acid, phthalic anhydride, etc., naphthalene is in short supply. Producing companies have done a grand job in increasing their recovery yields, but at some added cost. Some imported material is available, at prices somewhat higher than domestic material. If the paint and plastics industries continue to grow as they have in the past, the country could be in bad shape on naphthalene. At least one major oil company is working on a project that might produce considerable quantities as a by-product.

Sulfur is in ample supply, with some new mines being opened.

Chemicals from Petroleum. Items such as ethylene glycol, butyl alcohol, acetone, methanol, etc., should be in ample supply when new plants now under construction are completed.

Mineral Acids. Depending on location, these have been in both long and short supply. The freight rate is the determining factor as to where



Program Chairman L. G. Pochat relaxes after a job well done. Mrs. Pochat at left.

you can buy; in general the supply of acids should not be worrisome.

Phosphate Products. These should be in better supply in the very near future, as several new plants are under construction.

Phenol is currently in short supply, and if industries using this item maintain the demand, it is likely to remain that way. There seems to be some hesitation on the part of producers to expand on account of the benzol situation.

Ammonia. During the war, predictions were made that postwar ammonia would be "running out of everybody's ears" and that the price might drop to as low as \$40 a ton. Certainly this was a bad guess. The price of anhydrous ammonia was recently increased to \$70 a ton, f.o.b.

shipping point. The government built many large plants in addition to the expansions made by private industry. Today, ammonia in all forms and products manufactured from ammonia are in critically short supply. This is primarily due to the enormous demand for fertilizer products, both at home and abroad. Because of the high cost of building, very little additional capacity is being completed. This shortage could be with us for several years unless the fertilizer demand greatly diminishes.

Salt. Enormous tonnages of salt are used by the chemical industry. Up to a few months ago, it was in critically short supply. Capacity has been greatly increased, especially in the Louisiana mines, and producers are out looking for orders. The de-

mand in the textile business is not as great, and strangely, the farm demand is also down. Fewer hogs and cattle are being slaughtered on the farms because of the high prices being paid by the slaughter houses. Salt should not be too difficult to obtain, and there are possibilities of weakening prices.

Coal. Large quantities of coal, in the form of coke, are used by the chemical industry as a process raw material, in addition to that used for steam and power production. The increased cost of coal is one of the main components in the price rise of chemicals. In our section, good grades of coal are in ample supply; however, bad weather and the car supply could cause temporary shortages this winter.

Voluntary Allotment of Steel

By John A. Ingwersen

Vice President
Armco Steel Corporation
Middletown, Ohio

How the steel industry channels its output to meet critical defense and economic needs.

How voluntary allotment programs affect steel producers and steel consumers.

Legal basis of voluntary allotment and possible revisions in extending the plan.

A GREAT deal has been said and written about the Steel Industry's Voluntary Allotment Program, which is now being carried out under the supervision of the Office of Industry Cooperation of the Department of Commerce. Even so, I have been surprised to find that only a relatively few steel consumers have anything more than a vague and sometimes distorted idea of just how this program works.

Therefore, I shall try to give you, first, a short history of the development of the Voluntary Allotment Program; second, the personnel and responsibilities of the groups who are charged with its implementation; third, the means by which the different individual programs are acti-

vated; fourth, what programs are now active and those which are or may be called for later consideration; fifth, their impact upon the steel consuming public; and sixth, what may be in store for the future.

Background of Allocation

It was just about a year ago that the then Secretary of Commerce, Mr. Harriman, called upon various executives in the steel industry for advice about channeling iron and steel products into requirements that might be considered critical to the defense or general economy of this country.

About a dozen steel executives met with Mr. Harriman in Washington and urged that a trial be given to a program of handling such needs, as they arose, on a voluntary basis. At that time one program of this nature was already in effect—that of providing steel products for railroad freight

car building and maintenance. This program was working satisfactorily. Although many people in Washington felt that the task could only be accomplished by mandatory priorities, Mr. Harriman agreed to the steel industry's suggestion and asked a small group to suggest the technique by which such a program could be carried out. Next, the 80th Congress passed a joint resolution on December 30, 1947, known as Public Law No. 395, which established the legality of the program. Executive Order No. 9919, issued by the President on January 3, 1948, provided that the Department of Commerce be delegated as the agency to carry out the provisions of Public Law 395.

Committee Responsibilities

Members of the steel industry, under the leadership of David Austin of U. S. Steel Corporation, J. K.

Address at the second annual conference of District No. 6, N.A.P.A., Cincinnati, September 28, 1948.

Beeson of Pittsburgh Steel Company, and Walter Watson of Youngstown Sheet & Tube Company, had meanwhile been active in setting up committees to work with the Office of Industry Cooperation of the Department of Commerce.

The first committee approved by the Department of Commerce was the Steel Industry Advisory Committee, composed of the chief executives of 23 steel companies. Next, a committee known as the Steel Products Advisory Committee was established. The sales executives from 27 companies, Vice Presidents or General Sales Managers, made up the personnel of this group. A third delegation, known as the Task Force Committee, which was brought into existence simultaneously with the Steel Products Advisory Committee, completed the organization. The first meeting of the Steel Products Advisory Committee, at which consideration was given to several voluntary programs, was held in Washington on May 6, 1948.

Public Law No. 395, which is the keystone upon which the entire Voluntary Allotment Program rests, sets forth these purposes:

"To aid in stabilizing the economy of the United States.

"To aid in curbing inflationary tendencies.

"To promote the orderly and equitable distribution of goods and facilities; and

"To aid in preventing maldistribution of goods and facilities which basically affect the cost of living or industrial production."

If any steel consuming group or individual manufacturer considers that its products fall into any of the categories established by Public Law No. 395, these groups or individuals can present their case to the Office of Industry Cooperation of the Department of Commerce. Further-

more, the Department of Commerce or any other government agency may seek consideration for various manufacturers, whether requested to do so by the manufacturers or not.

Activating a Program

The Office of Industry Cooperation has the responsibility of collecting total steel requirements for each program, screening these needs and measuring the program's importance against the end hoped to be accomplished by Public Law No. 395.

After this has been done, the Steel Products Advisory Committee reviews all the facts and figures collected by the Office of Industry Cooperation and is asked to approve whatever programs may then be under consideration. Upon approval from the Products Committee, programs are then submitted to the Industry Committee (steel company chief executives) for its approval and recommendation for acceptance to the Secretary of Commerce.

Public Law No. 395 requires that any approved program must be given a public hearing before it can be made active. When this has been done, the Steel Industry's Task Force then meets to distribute total tonnage required among the producers participating. In most cases tonnage distribution is handled on the basis of each participant's proportion of the country's ingot capacity. In other words, if Mill A represents 10% of the steel industry's ingot melting capacity, that mill would be required to accept 10,000 tons out of a program totaling 100,000 tons. About 90% of the steel industry's entire capacity is represented. The 10% slack created by the absence of certain non-integrated or captive mills is finally borne also as an extra load by the participating producers.

Thus far, 11 different programs have been activated, amounting to ap-

proximately 529,000 tons per month. Nine other programs are now known to be under study which, if approved, will more than double the current load. How many more industries, agencies, or individuals are clamoring for consideration is not known, but the number is large.

Effect on Consumers

It has been correctly stated in the public press that the programs now active account for approximately 10% of the total steel output. At first glance this does not appear to be of distressing proportions. However, a single total tonnage figure, or a single percentage figure, means nothing. In order to determine the actual impact of these programs against the general economy it must be ascertained what the tonnage means in terms of extra load. For example, if out of 6½ million tons—the present total program load—it is found that 4 million tons would normally flow to program uses, the impact is then much less severe than the figures show. Yet this is always difficult and more often than not impossible to estimate. On the other hand, if a 6½ million ton annual load is distributed unequally between individual steel products, then the impact on individual users of those products is greater than bare figures indicate.

For example, we know that today 35% of the industry's plate capacity is being consumed by Voluntary Allotment program users. When this load is carried down to the level of individual mill product capacities, it becomes even more serious. There are cases of where some mills, lacking a wide diversity of product, have been required to supply 50% or 75% or more of their galvanized or hot rolled or plate capacity to the Voluntary Allotment Programs.

A Look to the Future

Now for the future outlook on these Voluntary Allotment Programs. I believe it is generally recognized that the steel industry has done an adequate job in carrying out its promises to the government; yet there are many interests that are far from satisfied and the pressure for special consideration builds up to greater proportions every day. You are all probably familiar with the fact that the draft bill passed by Congress on June 19 contained an amendment which permits the President to draft the steel industry and any or all of its output that may be required by the Armed Forces. This

(Please turn to page 340)



The Pittsburgh delegation checks in at the registration desk.



R. J. Thompson of Charleston, W. Va., at registration desk with B. J. Toerner, Service Chairman.



Speakers at the Building Materials Forum: Thomas Dougherty, Meade Johnson, and Arthur Hood.

Sixth District Conference

Ohio purchasing agents convene in Cincinnati for second annual district meeting.

Cost reduction programs and commodity markets discussed at two-day conference.

Broad opportunities for purchasing men are stressed by conference speakers.

THE Purchasing Agents Association of Cincinnati was host to the Second Annual Conference of the Sixth District of the National Association of Purchasing Agents, which was held in the Gibson Hotel, Cincinnati, September 27 and 28.

E. Lee Clayton, Director of Purchases, Philip Carey Manufacturing Company, Cincinnati, is Vice President of the Sixth District, which has some 1,700 members. Clifford F. Rehse, Vice President and Purchasing Agent, Victor Electric Products, Norwood, Ohio, was general chairman of the Conference, and the chairman of the program committee was L. G. Pochat, Proctor & Gamble Co., Cincinnati.

There were nine other committees collaborating in arrangements for and the conduct of the Conference, headed by: Albert B. Closs, hotel reservations; Albert H. Bader, hotel affairs; Arthur F. Tieman, attendance; Joseph J. Mullen, printing; Edward

C. Frederick, publicity; William McK. Reis, entertainment; Arthur W. Wheeler, registration; Andrew W. Wheeler, finance; and, Harold R. Kessler, Reception and Service.

The program was of high calibre and well diversified, covering a wide range of subject matter including Current Economic Trends, Purchasing and Cost Reduction, Lumber and Building Material, Paper, Containers, Non-Ferrous Metals, National Association Affairs, Fuels, Industrial Chemicals, and Iron and Steel, all presented by acknowledged authorities in their respective fields. Some 275 members registered for the Conference.

The Conference was formally called to order on the morning of September 27th by President J. J. Mullen of the Cincinnati Association. Following invocation, and comments by General Chairman Rehse and Program Chairman Louis G. Pochat, Mr. Mullen introduced the first

speaker, E. B. Gallaher of the Clover Manufacturing Co., Norwalk, Conn., whose paper on current economic trends and advice to purchasing agents, appears in this issue

Cost Reduction

One of the outstanding features of the meeting was the opening session on "Purchasing and Cost Reduction", which was led by B. D. Henderson, Purchasing Agent, Westinghouse Electric Corporation, Sharon, Pa. The other speakers were V. G. Lottmann, Director of Purchasing Research, Ford Motor Company; M. E. Carlisle, Purchasing Agent, Pittsburgh Plate Glass Company; and J. D. Hogg, Purchasing Agent, Cleveland Electric Illuminating Company. The speakers were introduced by Burton Lang, Purchasing Agent, A. P. Parts Company, Toledo. The addresses by Mr. Lottmann and Mr. Carlisle are reported elsewhere in this issue.



President and Mrs. R. O. Keefer of Pittsburgh, at the banquet.

Using "A Cost Reduction Program and Its Effect Upon Purchasing-Management Relationships" as a theme, Mr. Henderson stated that some managements still seem to think of purchasing as an order-placing department, existing to serve the rest of the organization primarily in a clerical capacity. Such an attitude on the part of management, he said, is the greatest obstacle the purchasing agent may encounter in a cost reduction program.

"If your management recognizes the purchasing function as an important factor in your company's ability to make a profit," he continued, "the future of your purchasing department will be quite different when the day comes that expenses are cut to the irreducible minimum. A cost reduction program is both an end in itself and a means for demonstrating the value of a competent purchasing organization.

"Assume that you have a cost reduction program in operation. One of your key responsibilities will be to see that your management gets a comprehensive, accurate, dependable picture of your results and accomplishments.

"Too many reports of purchasing department achievements are largely discounted because of the lack of an impartial independent audit. The most satisfactory method of establishing the value of your cost reduction program is to arrange for it to be audited and reported by an independent agency, preferably a portion of your engineering department. Only in this way will your accomplishments be accepted at face value.

"The proper auditing and reporting of the results of cost reduction work should clearly substantiate the value of the work being done. It is

only by such reports that you can expect to retain on your payroll the necessary personnel to do a real job of cost reduction when expenses are being cut and business activity is reduced.

"Few managements will cut the personnel of the purchasing department if it is made clear that such a reduction will mean the loss of profits equivalent to several times the expense of retaining the personnel.

Dividing Credit

"Reporting results raises the question of division of credit. It has been our experience that this can and should be avoided completely. Report total cost reductions on all projects on which the purchasing department has made an important contribution. Label the results participation, not exclusive credit.

"The administrative head of the cost reduction program should keep a record of these contributions and an explanation of just how the purchasing department participated. Periodic reviews of this record with management will avoid entirely the complications of dividing credit. In almost every case other departments and other people must cooperate with you to accomplish worthwhile results. It is most important that there be no division of credit which would make other departments and other individuals feel that they were competing with you for credit on such a program. Furthermore, it isn't necessary.

"It has been my experience that the cost reduction program can be a tremendous asset in improving relationships with the rest of the organization, particularly the engineering department. Since we do not divide credit, each department feels that they have everything to gain and nothing to lose by the closest sort of cooperation. The results reflect to

the credit of all parties involved. Our relations with our engineering department are better than they ever have been, because of our cost reduction program. If we were to discontinue this activity, I am sure that our engineering department would be the first to complain.

"Cost reduction does not apply only to large organizations. It can be applied equally well to a company in which the purchasing department consists only of the purchasing agent and a secretary. It is a way for better purchasing, and better management recognition of purchasing.

"Beyond the proper reporting and auditing of results, there remains a continuous job of demonstrating to your management the relationship between good procurement and company profits and performance. This is a selling job. Naturally it requires that you have the personnel, the policies, and the talent to produce results so that you will have something to sell."

A Planned Program

Purchasing Agent J. D. Hogg of the Cleveland Electric Illuminating Company reviewed the subject of cost reduction from the standpoint of "Planning the Program and Carrying It Out." He said, in part:

"A clear analysis of the objectives of the program is the basic point from which to start all planning. Among the considerations which would be a part of this analysis would be to determine whether this is a one-shot program or a continuing project with administrative emphasis on the continuing cost reduction efforts within the company and particularly within the purchasing department. Clear analysis in this section of the planning will help to answer the problems of defining a cost reduction as opposed to those cost decreases which are a fundamen-

Speakers at the session on paper: George Lawrence, Ralph N. Betts, and Joseph A. Cobey.



tal purchasing objective at all times. Some of the questions which should be answered are: Is the program confined to certain items, to certain operations, certain plants, certain departments, or is it company-wide?

"The three most important characteristics of individuals on the firing line of the cost program are initiative, judgment, and ability to cooperate with others. Effective work cannot be done in a program of this type unless the people doing the work are free for reflective analytical thinking, and this would rarely be possible for a buyer carrying on this program in addition to his normal duties. Proper control and emphasis with the vendors can best be maintained by retaining as a duty of the buyer, the responsibility for contact and negotiation with the vendor."

Mr. Hogg confirmed Mr. Henderson's remarks as to the seeking of credit for savings. "Above all," he said, "do not discredit your department or even the whole program by bickering or overemphasizing the matter of credit. Top management can determine who initiated an idea and who 'carried the ball', and should readily recognize the weight of the various phases of the program. That's part of the management job; it is part of your job to see that they have the proper information on which to base their conclusions. Much of the success and smooth running of the program depends on wholehearted cooperation between departments."

"The why and the benefits of the program, both to the company and to the individuals taking part in it, should be clearly understood. Each member of the staff should understand what his and other people's assignments are, and be invited to cooperate with others in their specific assignments."

"Frequently the most critical personnel problem will be how to tie in the new program with the buying and buyers already functioning; that is, to determine the extent to which the buyer will function in the program and what part, if any, in the final decisions he will have in the program."

Vendor Relations

"Ensuring proper vendor relations is a vital part of the administrative problem. However, the relations need not be any different than those which are the objective of any other well-run purchasing operation. The vendors must thoroughly understand your objective and find your methods fair. Proper utilization of the ven-

dor's help will not be obtained unless all the facts are given to the vendor, and when suggestions are offered by vendors, they must be duly weighed with an open mind and not immediately discounted as sales arguments."

"One of the vital and constructive parts of administering and carrying out the program will lie in the frequency and type of follow-up for results. Regular reports should be a part of all the operations, not only from those who are actually carrying out the job, but from the administrator who should keep top management carefully informed of the things which would particularly concern management decisions, and the value of the program to the company."

"The reports will enable an administrator to analyze the results of the program and give him valuable guidance for future operation or continuation of his cost-reduction program."

"To recapitulate the suggested method, is to plan as follows:

"Planning the program:

- (1) Clearly analyze objectives.
- (2) Outline methods.
- (3) Select and train personnel where necessary.
- (4) Plan interdepartmental relations.
- (5) Plan internal department organization.
- (6) Vendor relations.

"Carrying out the Program:

- (1) State objectives and plan clearly to all staff and other departments concerned.
- (2) Encourage constructive criticism.
- (3) Outline of why and benefits of the program—arouse enthusiasm.
- (4) Give specific assignments.
- (5) Follow-up for results—get reasonably regular reports.
- (6) Analyze results.
- (7) Review the methods, organization and planning periodically.

- (8) Make adequate reports to management."

Mr. Carlisle emphasized the necessity for teamwork, since the purchasing agent cannot achieve the ultimate in cost reduction without the support of management and the cooperation of manufacturing, traffic, accounting, and all other departments. Mr. Lottmann's paper discussed the techniques of cost reduction, as exemplified in the successful program of the Ford Motor Company.

One P. A. to Another

Executive Secretary George A. Renard of the National Association was the principal speaker at the luncheon meeting on Monday. Reviewing the activities of the national office and the numerous committees, he strongly emphasized that professional cooperation is the greatest asset of the Association, which now has a membership of 11,500 purchasing men in 81 local groups. He also reviewed national problems, and the economic and industrial effects of the national stockpiling program, the European Recovery Program, and defense orders now being placed.

Lumber, Building Materials

Thomas Dougherty President of the Dougherty Lumber Company, Cleveland, presided at a meeting on "Lumber and Building Materials" at which the principal speakers were Meade Johnson, general sales manager, Yale & Towne Mfg. Co., Stamford, Conn., and Arthur Hood, editor of the *American Lumberman*.

Mr. Johnson stated that supply problems in the building hardware field are not fundamentally different from those in other fields. Many items have changed from scarcity to plenty, and most of the cheap substitute materials are disappearing from the market.

He said that deliveries on stock materials are down to about one

J. J. Mullen, President of the Cincinnati Association, called the meeting to order Monday morning.





J. O. Gano of Crowell-Collier Publishing Company presided at the paper session.

month's supply on hinges, locks, etc.; and, specialty items are now down to three or four months. By spring, he said, the supply situation should be back to about normal, which is two to three weeks on stock items and less than two months on specialties.

Though labor costs have gone up 120%, Mr. Johnson said that the introduction of new production machinery had materially cut production time and costs. He told of the installation of a large machine which has reduced the making of escutcheon plates from a two months cycle to 59 seconds time. Though the present price trend is upward—say 5 to 10%, due to increased cost of metals and a third round of wage increases—he expressed the opinion that the long term trend is downward.

He also told of the development of a machine at a cost of a quarter-million dollars, which makes all of the components of a lock, ready for assembly. Such machines, he said, will bring down costs. The new type lock made by the machine can be installed in ten minutes, he said. Hardware parts are also being made of lighter components, materially reducing the weight of the finished product, an example being door closers which have been reduced from twelve pounds to seven. The weight reduction will make for lower transportation and installation costs.

Editor Arthur Hood of the *American Lumberman*, at the outset of his talk on the lumber situation, said that the N.A.P.A. bulletins provide the finest available information on the lumber market.

He recommended that the local lumber dealers be given consideration, as they can serve the industrial purchasing agent in a very satisfactory way. Not only is the dealer familiar with the many species of

lumber, but he also has an inventory which is always available when an emergency develops.

Lumber is now being produced at the rate of 37½ billion feet annually. There is a larger percentage of green lumber and poorer grades than formerly. Inventories in wholesale and retail yards are above normal.

One of the trends in the lumber fields is to centralize remanufacturing near sources of supply. The better mills are stepping up their facilities to produce cut stock and special sizes, and there is a trend toward precutting construction lumber, which, Mr. Hood said, makes for substantial savings in building cost.

He urged that purchasing agents consider the advantages of having lumber cut at the sawmill the way it will be used, being sure of having the right grade and the right species. He said that this practice meant less freight because of eliminating waste; there would be savings in unloading and in storing and in cutting material; cut stock can be handled with modern material handling equipment; and storage space could be cut down. "You get 100% usable lumber delivered to your specifications, and the ultimate cost is certain to be less," he concluded.

Paper

J. O. Gano, Purchasing Agent, Crowell Collier Publishing Company, Springfield, Ohio, was the presiding officer at a session on "Paper", at which various phases of the paper situation were presented by George Lawrence of the Mead Sales Corp., Dayton; Ralph N. Betts, Purchasing Agent, American Educational Press, Columbus; Joseph A. Cobey, secretary of the Howard Paper Mills, Dayton; and T. A. Corcoran, Purchasing Agent, *The Courier-Journal*, Louisville, Ky.

Speaking on "The European Pulp Market and the United States", Mr. Lawrence stated that Canada is so closely identified with our own economy, especially as it relates to the pulp and paper industry, that it should not be considered a "foreign" source of supply. Sweden, Norway and Finland are the principal foreign sources, with particular emphasis on Sweden, which is the greatest of all European pulp producing companies.

There are two types of paper mills in the United States, so far as pulp supply is concerned, namely, the integrated mills and the non-integrated mills he explained. The former are self contained; they manufacture their own pulps. The non-integrated mills must procure from outside

sources all or a portion of the pulps used in their paper or board mills. They are dependent upon Scandinavian sources for large amounts of pulp. Prior to the war the annual imports of pulp from these sources totaled 1,380,000 tons, 1,000,000 of which came from Sweden.

But after 1939, practically all pulp imports from Europe were terminated because of the war. However, paper and board were listed as essential materials early in the war, and the needs of the non-integrated mills were supplied by the huge increase in domestic production.

Book Paper

U. S. pulp production in 1947 was 11,950,000 tons, almost double the 1937 production. Since the war the U. S. Pulp market has changed incident to increased production here and in Canada. Sweden resumed its pulp shipments to the United States, but this summer, delivery of large amounts of Swedish pulps was refused because of high prices.

There are indications that the supply and demand situation for domestic pulps is becoming equalized, and for the first time in many years U. S. pulps have been offered on the spot market for export. Sweden will have to reduce prices in conformity with the domestic market if they wish to supply the U. S. industry.

Ralph N. Betts, summarizing the book paper situation, stated that in addition to the "boom" business cycle, further volume increases are accounted for by the industrial development taking place in such countries as South Africa, India, and Australia. He also stated that cost and scarcity factors are responsible for changes in paper usage, citing as example *Life Magazine* and other large tonnage users, which are changing back and forth from free sheet to ground wood. Scarcity and increasing costs of free sheet are forcing tonnage users to turn to ground wood in order to round out their production.

In considering demand increases, he said, we should not overlook the requirements of the National Security Resources Board. This can and will affect all grades of paper.

From a production standpoint, Mr. Betts said there are several specific instances of production increases, as a result of increased mill capacity, and jobbers' inventories have been increasing.

From the price standpoint, there is not much encouragement, he declared. Groundwood papers, free sheet, groundwood coated, process

coated, and enamels "are either up now or will be next week, 1/2 cent per pound."

In conclusion Mr. Betts stated, "The fact that free sheet papers are easier to obtain will, I believe, have a tendency to at least stabilize prices on their present level."

T. A. Corcoran expressed the opinion "that we are in for a rather sharp recession in business soon. I think we need a correction of the inflated price situation", he said. "Although it will be a bitter pill to take, I think that the sooner we get it over, the better it will be for all of us. The graphs of business conditions and prices following all the wars we have participated in have great similarity. In my opinion, when we get through this period and get prices on a sound basis again, we can look for a long period of good business."

Supply—Demand

"In some lines of business supply seems to have caught up with demand. This holds true in most grades of paper and pulp.

"Total production of paper and paperboard in the United States in July amounted to 88.1% of capacity. For the year 1948 to date, production has averaged 97.5% of rated capacity compared to 103.7 for the like period in 1947. Surely if demand were as strong today as it was a year ago, mills would be operating at full capacity.

"This same condition does not apply in the case of newsprint. Many newspapers are still short of this vital raw material. Some are still allocating space to their advertisers. But there is evidence of easing, even in this market. Spot tonnage, which was bringing \$200 to \$300 a ton a year ago, is being offered as low as \$164 a ton today. Some contract suppliers are indicating that they may have additional tonnage to offer in 1949. Finland plans increased shipments next year. And it is quite likely that Sweden will increase its newsprint shipments sharply in 1949 to gain badly needed dollars.

Kraft

"Kraft wrapping paper also continues tight. Last year we had cut our consumption of Kraft by 50%, and in spite of this reduction, we were unable to take care of minimum requirements from our domestic sources. We had to import several lots from Finland to tide us over. This situation remains pretty much the same today.

"In spite of the apparent easing in many grades of paper, there have

been none, or at least very few, downward adjustments of prices. However, there has been marked improvement in quality of many grades, which is equivalent to a price cut. Probably we can expect no substantial reductions in paper prices in general as long as business continues at its present pace. But if we do have a recession in business, we can expect rather prompt downward revision in prices. It is a good time to study our inventories carefully to make sure that we are not caught with excessive stocks of high-priced or inferior grades of paper."

Containers

Gilbert W. Riches, Assistant Purchasing Agent, Philip Carey Manufacturing Co., Cincinnati, was the presiding officer at a Monday afternoon meeting on containers. The speakers were H. M. Treen, President of the Fort Wayne Corrugated Paper Co., Fort Wayne, Ind.; R. L. Perin, General Sales Manager, Central Division, Continental Can Co., Chicago; and S. L. Rairdon, Vice President, Owens-Illinois Glass Co., Toledo, Ohio.

Mr. Treen pressed the opinion that "We are all still fairly close to the shortage days that persisted throughout the wartime years and in the immediate postwar period. It might be well for us to keep clearly in mind those things that we did and the devices employed to help ourselves during the wartime shortage, as the present period of plentiful supply may be short-lived when one considers the headlines each day in our newspapers."

He declared that the several hundred box plants scattered throughout the United States have always had, and do have today, a productive capacity far beyond any existing or

foreseeable demand. It is estimated that the existing box plants have a productive capacity of 90 to 100 billion square feet annually. The shortage of shipping containers during the war and following it, was caused by a lack of capacity to produce containerboard in sufficient quantities to meet the combined war and peacetime demands.

During recent years, the expansion in containerboard production has been in the kraft industry in the South. Several mills have been completed and brought into production within the past 18 months and have done a great deal toward increasing the available supply of containerboard.

Mr. Treen stated that data available shows that the demand for corrugated and solid fibre boxes has doubled each decade, expressing the opinion that the demand for fibre shipping containers will continue to increase substantially as time progresses.

Following the World War II, the trend toward integration—development of fabricating plants by the board mills, has been well defined, according to Mr. Treen. The industry is now roughly 70% integrated. He opined that integration might mean greater stability in prices, and more uniform quality.

Metal Containers

Mr. Perin's subject was "Availability and Price Trends of Metal Containers." He characterized his analysis as a "short range picture" as he saw conditions today.

The basic materials in the metal container field are steel and tin. Solder, lithographing and coating materials, and other supplies are a very small percentage of the total. Labor, of course, is a most important factor. While the supply of steel will remain

Part of the Cleveland delegation at the banquet.





E. G. Sander of Monsanto Chemical Company and National Vice President T. A. Corcoran of Louisville.

tight for some time to come, there is no reason to believe that production of metal containers will be curtailed on account of steel shortages. On the other hand, he continued, any further large increases in demand for cans might run into steel supply difficulties.

Enamels are replacing tin for many uses. The electrolytic process of coating tin has reduced to a very considerable degree the amount of tin needed to cover a given area of metal as compared with the hot-dip process. Tin is not as critical an item in can making as it was prior to the war.

Tin is needed on all cans that are soldered which in turn includes all cans for hermetically sealed foods. The only exception to this is coffee where the soldering of black plate is a new development.

The present market price of tin is \$1.03 a pound, and this is considered a large item even if only a pound is used on a thousand containers. Conservation Order M-81 which restricts the type of products that may be packed in cans made of tin plate, as well as the weight of tin coating, is still in effect. The supply situation, Mr. Perin said, is definitely improving, though no easing of tin prices is foreseeable.

In 1939 the can industry turned out approximately 17 billion cans. In 1947, 26 billion cans were manufactured, and the 1948 production is even higher.

Labor rates are up with recent advances not reflected in can prices. Freight rates and court decisions on equalization should be watched as they may result in higher costs of both the raw and finished product in some areas.

New production and facilities will be expensive and tend, through higher overheads, to keep prices up. However, there is enough expansion

and new facilities planned so that once all materials are freely available, the industry will have sufficient capacity to handle any reasonable demands.

Non-Ferrous Metals

E. F. Jung, Waltz-Dettmer Supply Co., Cincinnati, was chairman of the Non-Ferrous Metals conference, at which papers were presented by A. H. Heitz, Cincinnati District Manager, Chase Brass & Copper Co., Howard E. Riegler, District Manager, Revere Copper & Brass Inc., L. H. Gray, District Manager, Aluminum Company of America, and Dr. George Perkins, Technical Director, Reynolds Metal Co., Louisville, Ky.

A. H. Heitz, directing his remarks to the "purchasing agent who is definitely interested in copper and copper-alloy products," said that he would try to give him an idea of the likelihood of his getting all of the material he will require during the balance of 1948 and 1949. This problem, he said, has two phases: One is the available supply of copper and zinc, and the other is brass mill capacity to convert this material into the forms in which it is required.

Ingot Copper: For the first seven months of 1948, copper consumption in the United States averaged 116,500 tons monthly. U. S. mine production, including refinery scrap, was at the rate of 85,500 tons per month. Copper imports, accordingly, must make up the deficit. In addition to the domestic demand there is heavy demand from abroad, and our Government is anxious to purchase copper for its stock pile. Demand will be well in excess of supply for the balance of this year.

It is impossible to provide an accurate forecast for 1949, as there are too many uncertainties in the present situation. There is nothing to indicate any easing of a rather tight worldwide and domestic copper situation nor any softening in the domestic market.

Zinc: Demand for slab zinc is expected to remain high. Requirements are running considerably in excess of 1947 zinc shipments to industry and it is believed that Government purchases for stock pile purposes may have to be curtailed.

Brass Mill Capacity: The brass industry generally has considerably increased facilities for producing sheet, rod and tube. It is felt that the industry will be able to more satisfactorily take care of the demand for its products up to limitations set by the available supply of raw material.

"It has been our experience", he said in conclusion, "that the purchasing agent who obtained the best results in the way of shipments and service in the past was the one with a well developed program, who placed orders in accordance with a well thought-out plan, with reasonable delivery schedules attached. The poorest service was received by the customer whose every order was a hurry order which was rushed in at the last minute. Production people are only human, and the fable about the young lad who cried 'Wolf' once too often is definitely true to human nature."

Operating at Capacity

Howard E. Riegler, District Manager, Revere Copper & Brass Inc., said that the copper fabricating industry is in the happy position of operating at approximate capacity, yet of being able to meet all orders with reasonable promptness. "There is nothing in the near future, as we see it, that should upset this favorable picture", he said.

"Speaking from our own contacts with the forces of demand and supply," he said, "I would say that they are approximately in equilibrium. We have never in any recent months failed to obtain whatever copper we needed for fabrication, to meet the orders of our customers. We have never had to refuse an order, and on the whole the speed with which we can fill an order has been on the increase during 1948. Although the copper market is undeniably tight, we are finding supplies adequate, and depending upon the character of the orders we receive, we might even increase the present high rate of copper fabricating output."

There are two new elements which might affect the supply of copper in the immediate future, he said. One is the government's stockpiling program, which has been announced as 30,000 tons for the current year, or only 2% of current consumption. Another factor is the European Recovery Plan which calls for the financing of important quantities of copper to the countries which are participating in the benefits of ECA. An estimate of the current copper exports under ECA shows that they will be less than the exports to the same countries in 1947, and therefore not of serious impact on the market.

On the supply side, said Mr. Riegler, the current prices of copper are ample to stimulate mine output. He declared that the one factor which all must guard against is the threat

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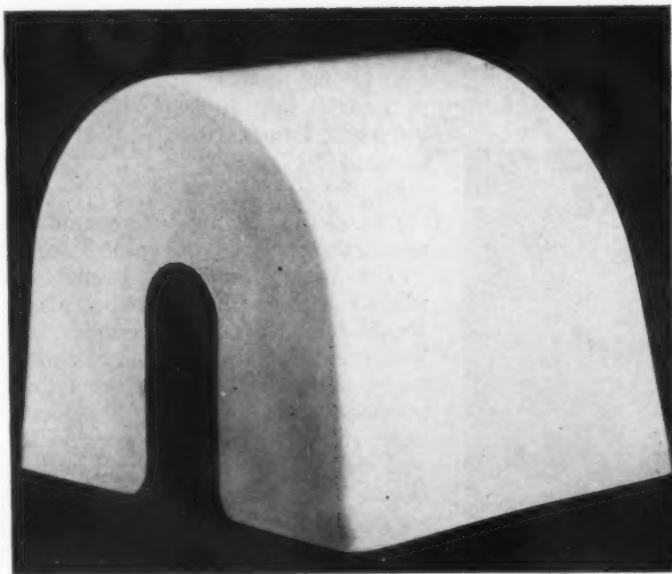
Progress in Plastics

● By George E. Henry

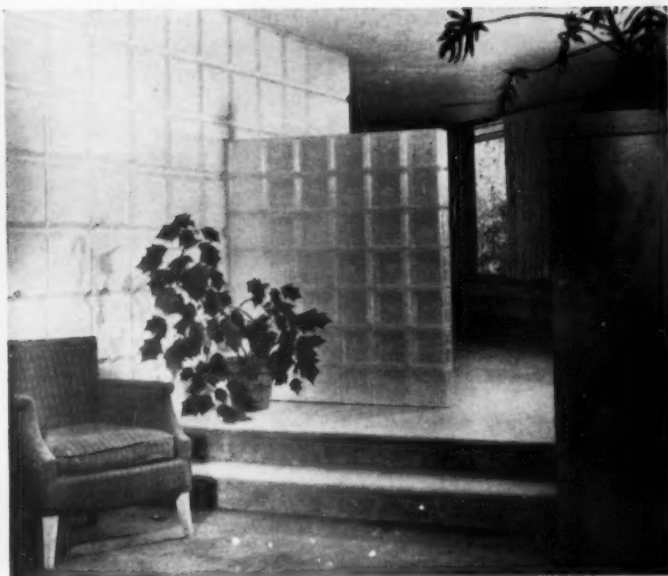
Third annual exposition reveals many postwar developments now at marketing stage.

Fabrics and plastics reinforcement open the way for wider fields of application.

Technical information is essential for proper selection of materials to fit end use.



This is a high line insulator cover made from the U. S. Rubber Company's Versalite, a thermoplastic that is tough, light, and featured by high dielectric values.



New plastic interior partition blocks made by Columbia Protectosite Company. Their weight is about one-fifth that of glass blocks.

THOUGH the Third Annual National Plastics Exposition recently held in New York City was not open to the general public, more than 50,000 members of commerce and industry registered for the colorful and impressive presentation which was held in Grand Central Palace, September 27-October 1.

This huge attendance representing products manufacturers, tradesmen and technical men, attested the growing interest in the products of the plastics industry, now a sizable industrial giant producing some billion and a half pounds of resins and molding materials annually.

Thousands of items made of one or another of the 30-odd base plastics in the form of moldings, extrusions, castings and sheet material were on display. These included mechanical

and electrical components and products, tools, tubing and other industrial materials; civilian products of all kinds—utilitarian and decorative, sheeting and textiles; and molding, extruding and fabricating equipment.

A great deal of interest was evidenced in some of the comparatively new plastics materials which have rapidly come to the fore since the war years, such as polyethylene, the polystyrenes, improved acetates, the diversified applications of the nylons, a new alkyd plastic, products of new phenolic formulations, a new cold injection molding powder, Fiberglas products for plastics reinforcement, curved extruded plastic channels, and decorative laminates. In addition there were surface coating materials, and resins for treating fabrics to prevent shrinkage and rumpling. More

than 100 exhibits presented the plastics story, from buttons to boats.

It was emphasized by the exhibitors that a very definite technical "know-how" governs the practical application of the numerous plastics base materials and the hundreds of plastics formulations developed for specific end uses. Furthermore it was stated that "there is a difference in molds, molding and molders" insofar as molded products are concerned, and anyone considering the utilization of plastics, as components or as completed products, should procure advice from competent authority in the plastics field on mold design, selection of right material for the proposed end use, costs, and other data.

Among the new developments of industry-wide interest was an alkyd molding compound introduced by



Here Lumite plastic screening is used for protector cover on air-flight circulator. The Lumite mesh is flexible and will not rust or corrode. It is woven of the Dow Chemical Company's Saran.



Bakelite polyethylene plastic used as packaging material for peat-humus. It is unaffected by the organic activity of the material.

Libbey - Owens - Ford Glass Company's Plaskon Division, said to be the first new molding compound the industry has developed since the war. It belongs to the thermosetting group and features excellent electrical characteristics, high heat resistance (350 to 400° F), low moisture absorption, and excellent dimensional stability. It is said to be particularly suitable for electrical and mechanical applications. Listed among its chemical qualities are resistance to all common organic solvents, oils, fats, and strong and weak acids, with good resistance to weak alkalis. It is said to be extremely fast curing, and to require comparatively low pressures for molding. The molded products are featured by a hard durable surface with good resistance to abrasion.

Among the plastics that received unusual attention was polyethylene, which is being produced by the Bakelite Corporation and E. I. du Pont de Nemours and Company. Polyethylene is a flexible, tough plastic



This bag is made of "Glamour-Gator" plastic, which realistically simulates genuine alligator. The sheet material is a product of the Peabody Plastic Products Company.



Melmac plastic tableware, molded by the Plastics Manufacturing Company, Inc., Dallas, Texas.

that has many favorable qualities. It has high impact value, and is practically unaffected by low temperatures—that is to 90 deg. below zero, but will soften at temperatures approximating 230 deg. F. It is practically impervious to moisture absorption, though films made of it have a low rate of moisture vapor transmission. It is translucent and can be produced in a variety of colors.

Polyethylene may be used for making "squeezeable" containers for cosmetics and toilet products. Its moisture vapor transmission qualities especially adapt it for packaging frozen foods and meats and vegetables. It offers the qualities of lightness in weight, durability, and of being odorless and tasteless, thus making it ideal for tableware and other civilian products.

It is extensively used for cable insulation and for coaxial cables, power and lighting line wire, for which lead was formerly used exclusively. A large part of the current produc-

tion, it is said, is allocated to the power and communications industries.

Two new basic types of Styron (polystyrene) were announced by the Dow Chemical Company. These are known as Styron 637 and Styron 475. Styron 475 is said to combine the qualities of rigid dimensionally stable polystyrene and the tough cellulosic plastics in one material, thus adapting it for automotive parts, especially those requiring metal inserts, toys and mechanical parts, refrigerator moldings, and so on. It is now being produced in a range of opaque colors.

The other new Dow material, Styron 637 provides added light stability to crystal and certain polystyrene colors, increasing color permanence four to five times in applications such as interior lighting parts, fluorescent diffusers, lamp shades, optical parts,

A New Pressed Board

One of the new announcements was about the making of pressed boards from sawdust and wood chips by mixing them with small portions of Resinox, a Monsanto phenolic resin. The pressed boards, which are made under pressures of less than 200 pounds psi, can be sawed, turned and otherwise handled like wood. The material has no grain, and weighs about the same as the wood from which the sawdust comes. The plastic binder is said to improve the water resistance of the wood fibers. The material may be painted or enameled. At present, the Curtis Companies, Inc., of Clinton, Iowa, are producing panels by this method under the tradename "Prespine". Contour-shaped articles, trim molding semi-structural pieces, etc., requiring moderate strength, low cost and light weight are claimed within the scope of the new material.

Three new materials were shown by the American Cyanamid Company. These included a fast cure beetle plastic (urea formaldehyde molding compound) which greatly reduces cure cycle and increases production of molded parts in compression-type presses; Melmac plastic No. 404—a highly translucent melamine molding compound especially designed for the manufacture of high-grade shirt buttons and women's dress buttons, and Melmac 440, a new resin for the production of solid colored laminates.

The Cyanamid exhibit included a Laminac resin-Fiberglas boat, fabrics treated with Melmac resins, and products illustrating the use of wet strength paper resins and surface coatings. The company's Parex resin

607 is widely applied for wet-strength paper in the production of laundry bags, bags for shipping ice, paper table cloths, napkins, window shades and draperies, locker papers and wiping cloths.

The Celanese Corporation exhibited a new flame and heat resistant cellulose acetate thermoplastic called Lumarith XF. This new material, it is stated, bridges the gap between the thermoplastic and thermosetting plastics by combining the flame and heat resistance of the latter with the easy moldability and color range of the former. It has earned the Underwriters' Laboratories approval in such applications as lightning arresters, electric mixers, vacuum cleaners and various switch housings. An interesting feature of the Celanese exhibit was a demonstration of a new wireless translator used at sessions of the United Nations, molded of Forticel plastic. It enables the listener to tune in a speech in any language he chooses.

The Chemical Division of the Koppers Company, Inc., introduced a new high heat-resistant, low shrinkage polystyrene plastics, embodying three characteristics not previously attained in material of this type, namely: It can be molded into a glass-clear product as well as in every color of the rainbow, it molds as easily as regular grades of polystyrene; and when made in colors, it shows unusual resistance to fading. It is known as Koppers P-8.

The General Electric Company displayed an extensive line of molded and laminated plastics products, featuring a telephone booth of laminated Textolite, piano action parts, a new shock-resistant rubber-phenolic mate-

rial, and a number of new patterns in its decorative laminated Textolite materials.

The Rohm & Haas Company exhibit was featured by 8 x 10 foot sheets of Plexiglas, the largest cast plastic sheets ever manufactured.

A new cold-mold plastic powder known as Gladite, which requires no pre-heating, no pre-forming and no after-baking, was presented by the Myler Plastics Corporation of Jersey City, N. J. The maker states that it can be molded into finished plastic parts at speeds as high as 30,000 small units per press per hour. Only one processing operation is involved—the single stroke of a molding press. This powder is available in any color, black to a light pastel. Its physical and dielectric properties can be varied by formula to adapt it to specific product uses.

Curved Extrusions

The Anchor Plastics Co. of New York, included in its exhibit a number of channels extruded in circles, ellipses and ovals. The channels can be extruded in a large variety of cross-sections, and practically any diameter.

The fabrication of Tenite sheeting into sample boxes headed the attractions at the Tennessee Eastman exhibit. Blanks of the sheeting were quickly formed into colorful boxes on a Taber Thermodraw press. These were produced at the rate of five box cups or seven lids per minute, using .020 gage Tenite sheeting. The exhibit included a number of Tenite molded products of particular interest to sportsmen, such as decoys, shotgun stocks, and so on.

Several interesting plastics products were displayed by the Plax Corporation of Hartford, Conn. Among these were numerous new applications of the self atomizing plastic bottle, the use of polyethylene by the rubber industry as a chemical package, and a protective wrap for white wall tires.

Of especial interest was the Plax Company's presentation of the M. W. Kellogg Company's new high temperature, tough, chemically resistant non-flammable material known as Kel-F. This material has satisfactory properties over a temperature range of 700° F., that is, from a low of—320° F. to a high of 400° F. It has unusual resistance to chemical action, no effects being observed after prolonged exposure to concentrated sulphuric, hydrofluoric and hydrochloric acids, strong caustic, fuming nitric acid, aqua regia, and other oxidizing materials.

This plastic has exceptional water resistance. While it slightly deforms under pressure, it has good "memory" and returns to its original shape when the pressure is released. It also has high impact strength at low temperatures, and resistance to thermal shock. And an unusual feature is that it is remarkably amenable to heat treatment. It is stated that just as the properties of steel may be widely varied by tempering or heat treatment, so may the properties of Kel-F be similarly varied over a considerable range. Thus it may be made relatively soft and resilient, or harder and less yielding, without sacrifice of any of the stability characteristics of the plastic.

Marvinol VR-10 was the subject of an interesting statement by the Glenn L. Martin Company, to the effect that

Circular pink-and-blue boxes formed from extruded Tenite sheeting were distributed to visitors 'direct from the press'.



Theatre seats use Lumite plastic upholstery, made of Saran, by the Chicopee Manufacturing Corp.





General Electric exhibited a telephone booth of laminated Textolite.

this new polyvinyl chloride resin can be processed in five different ways, eliminating the need in many cases for using a number of single purpose resins to achieve the same thing. According to Vice President Robert H. Kittner, "Marvinol can be calendered, extruded, or used as dispersions, and it can be cast or molded. This opens a wide variety of applications. For instance, processors have been producing extruded rigid tubing suitable for a variety of users, and they have calendered film for shower-curtains, while others are making coatings for heavy-duty fabrics—all from this one resin." Typical uses are upholstery, luggage, floor and wall coverings, draperies, shower curtains, belts, industrial tubing, footwear, wire and cable jackets, tank linings, gaskets, garden hose, toys, and numerous other products.

Plastic Partition Block

The development of a plastic partition block for interior use was announced by the Columbia Protekto-site Company, Inc., of Carlstadt, N. J. It marks the entry of an interesting new plastic application in the field of architecture.

Made of Styron, a Dow plastic, the blocks weigh about one-fifth as

much as glass blocks, and they afford particularly good light transmission. The blocks have an interlocking rib which allows rapid installation and produces an attractive, non-load-bearing partition for interiors. Production plans include making the blocks in crystal clear Styron, and in transparent and translucent colors ranging from pastels to dark shades.

Tough Thermoplastic

A unique thermoplastic material that is tough, light in weight, and easy to form into compound shapes was announced by the United States Rubber Company. The new material, known as Versalite, is non-corrosive and stable under changing atmospheric conditions, and has exceptional electrical insulating properties and a low rate of heat conductivity. Versalite can be formed into irregular and compound shapes as large as 5' x 10'. It can be made in almost any thickness above .020" and can have solid color throughout with dull, satin, gloss or embossed finish. It is now being used for a new type of shipping container for dry and frozen foods. Methods of bonding the material to itself or other materials have been developed. Cutting, drilling and punching can be accomplished on ordinary wood or metal working equipment.

Polyplastex United, Inc., of Elmhurst, N. Y., introduced "Synspun" at the exposition. Synspun is a combination of glass fibers in a swirling design, impregnated with synthetic resins. It is a thermoplastic material that may be formed by heat and pressure into a wide variety of products. Synspun may be sewn, laced, glued

or riveted, corrugated and fluted, and also pleated at an elevated temperature. It is available in a wide range of thicknesses and in varying degrees of flexibility or rigidity.

Among the exhibits that proved an eye-catcher was that of the du Pont Company, and of especial interest was the Nylon division. Here the visitor gained a new concept of the versatility of the nylons as filaments and as molding materials. Industrial and mechanical products of molded nylon included cogwheels, tape, cordage, brushes, coilforms, strain relief grommets, lining for pipe fittings, lock nut sections, bearings and gears.

The du Pont exhibit also presented polythene molding powders in the form of blown bottles, tableware, pipe fittings, bottle caps and liners; sheeting in a wide variety of uses in pattern and color; and polythene packaging in the form of bags and wraps of low moisture permeability, chemically inert, and closed by heat sealing.

Westinghouse presented a diversified exhibit of Micarta and products made therefrom. There was laminated Micarta in plates, angles, channels, zebs, rods and tubes for varied industrial applications—mechanical, electrical or chemical; molded Micarta in the form of gears, pulleys, bearings, bushings, buckets, panels, door liners. Molded Micarta consists of treated material, laminated or chopped and then formed in a mold under heat and high pressure. The products have unusual ability to resist moisture, corrosion, chemicals, wear, heat and cold, electrical shock and use stresses.

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Radio cabinet molded from the Koppers Company's new P-8 polystyrene reveals its high heat resistance in boiling water test.



Buying from the Smaller Producer

Special talents and personal interest can be put to work for the buyer's advantage.

By E. L. Cady

Cooperation solves immediate supply problems and often results in bonus values.

It pays to develop the facilities and good will of smaller sources of supply.

THE meaning of the term "smaller producer" is relative to the industry involved. A small steel mill, for example, would represent a huge plant and equipment investment and amount of operating capital as compared to a small silk mill or a small machine shop.

For purposes of this article a smaller producer is defined as one which is small enough so that the principal proprietors or managers have direct personal interest in, and supervision over, every production order that goes through the shop.

This definition allows quite a range of plant sizes within single industries. A fairly large factory can have every operation under the personal eye of the owner, and a small shop can be the victim of absentee ownership. Nevertheless the general picture of direct personal management is clear.

Because of this direct proprietary interest, the smaller producer is at once a great opportunity and a severe test for purchase engineering. The management usually consists of one man who is a specialist in one phase of his business and who is much less versed in other phases, plus a handful of assistants whose principal values are their abilities to cooperate with the personal traits and ingenuities of that one man.

All of the remaining divisions of management have to be suggested, supervised or even outright supplied by the purchase engineers who buy from the small outfit. To the extent that this cooperation in management problems is sympathetic and effective, the ingenuity of the personal manager becomes useful to the purchasing company.

Developing a Supply Source

One of the larger automobile companies studied a smaller producer of anti-friction bearings, found that continuity of operation was the prin-

cipal problem. When the bearings maker was busy, it needed plenty of skilled labor. When the orders slackened off, the labor had to be laid off. Often a pick up of business would find that the labor had found satisfactory employment elsewhere. Then the company had to find and train new men. This raised prices and slowed deliveries.

The purchase engineers placed a single blanket order with the producer, at such prices and terms that the producer should gross about 25%, but with a provision that the parts should be shipped as and when the producer had them ready, provided that the entire order should be completed within one calendar year.

To make sure that there was no materials supply hitch in the pro-

cedure, the purchase engineers also supervised the arranging of a contract between the producer and a steel mill for the necessary amount of SAE 52100 tubing.

A third provision was that the producer should constantly keep the purchasing company informed as to the status of the steel mill's credit account for this steel. There was to be no hold up of deliveries occasioned by failure to pay bills.

The first result of all this was that the purchasing company received a large number of completely satisfactory bearings at very good prices. But the true aim of the entire operation was that the small producer should become a source for all sorts of accurately ground and finished parts ranging from simple washers

Fine craftsmanship is frequently characteristic of the smaller shop with close personal supervision.



and stampings to production tool supports.

With a guaranteed volume of business to support his day by day operations and meet most of his pay roll, the proprietor was in position to devote all of his ingenuity to these small and special products. A source of supply thus was opened to take care of dozens of small but vexatious purchasing problems.

A Point of Pride

One of the problems in dealing with the smaller producer may be the professional pride of the proprietor. It is a wholly natural psychological fact that men tend to become defensive and even belligerent when approached on their weak sides.

A smaller producer of highly com-

producer had picked that one from the lot by trial and error, he worked out some techniques for applying it that made it a much better finish than the purchase engineer had expected it to be.

With this as a starting point, the purchase engineer talked to him about finishes and their effects upon product sales. The products bought from this company involved considerable waste when cut from standard sized lumber, and the smaller producer had been burning this waste. As the conversation about products developed, it was steered around to this waste, the items which might be made of it, and where they could be sold.

Development of these by-product markets allowed the smaller producer to cut his costs and prices on the

agent could not let himself get in the position of being responsible if the smaller producer bought at the wrong time and thus had costs higher than his competitors.

Everything was handled by a mutually understood code of indirect hints. During an interview held in the month of January, for example, the purchasing agent might state that he expected to buy electrical products late in March. In the natural course of events, raw materials for these would then be procured early in April to effect normal delivery times. But with that hint the smaller producer could watch the copper market weeks earlier, and intensively from the middle of March on. He had no guarantee that he would receive an order from this buyer. It was up to him to make his decisions. But basing his judgment upon the information possessed by a large company, the smaller producer was in fair position to keep his materials costs down no matter who his customers turned out to be.

Sharing Technical Information

One of the problems of the smaller producer can be lack of library facilities. Only rarely does a smaller producer read all of the technical magazines he should, nor make a wise selection of the ones to which to subscribe. His collection of technical books is likely to range from haphazard to non-existent. And this weakness is likely to show up in lack of advanced design in his products as well as in low efficiency along his production line.

The purchasing agent of a large electrical manufacturing company refers smaller producers to his company library whenever they appear to need information.

The librarian in turn makes suggestions as to how they can use their local libraries if their home cities are known to have technical ones.

One odd result of this was that a small producer of furnaces, looking for data on ceramic linings, happened upon an article about induction heating. He became so interested in the subject that he made a special study of its problems, went into the induction heating equipment business, became a good customer for products made by the electrical company.

In another instance a smaller producer interested in low temperature thermal insulation materials was referred to the library for data, was referred to his home town library (Akron, Ohio) by the librarian, found there technical data which enabled him to improve his product and



The buyer may be able to help in maintaining the required stocks of raw materials for his orders

pressed stabilized wood products showed great willingness to reduce prices whenever he could cut costs. But the purchase engineers found that he instantly rebuffed suggestions. He "did not want his customers to tell him how to run his business".

One of his troubles was in finding a durable finish that would be sufficiently abrasion resistant while clinging to the hardened surface.

He was asked to do the buyer a special favor by trying out several finishes, the basis of the request being that with his specialized knowledge of his product he could tell more about the effectiveness of a finish than anyone else could.

The purchase engineer knew in advance that only one of the finishes would work. But when the smaller

original items. This was the objective of the maneuvering. And the better results obtained with the finish represented a highly valuable bonus.

Timing Raw Material Purchases

There are other smaller producers who are all too eager to obtain advice.

During the prewar years, when the swings in the copper market were likely to be important to makers of electrical goods, one of the smaller producers constantly sought the advice of the purchasing agent of a large company.

It was a situation to be handled with care. The purchasing agent's company benefited price-wise if the smaller producer bought copper at the right times and thus kept his costs down. But the purchasing

reduce the prices at which he sold to the electrical company.

Casting of bread upon the waters in this way can have some highly valuable effects.

Promotional Aids

A purchasing agent was being constantly solicited by a young and aggressive smaller producer who plainly needed a larger volume of business if he were to quote the necessary prices. Happening to meet an equally aggressive but small advertising agency manager, the purchasing agent introduced the two men to each other.

The advertising agency was allowed to consult the purchasing agent's advertising and marketing departments for suggestions. As a result some new markets with channels of distribution and sales and advertising methods were laid down for the smaller producer.

Within a year the smaller producer's business had been expanded to the point where he could quote prices of interest to the purchasing agent. The business is still growing with the friendly help—mostly given over the lunch table—of the marketing men of the larger company.

By-Products of Cooperation

Not all dealings helpful to smaller producers come from big companies.

One small producer was a specialist on heat treating, another on automatic screw machine operation. The automatics man wanted to put in some furnaces of his own for small and special work, but to continue having most of his heat treating done at the

heat treat shop on a contract basis.

The heat treat shop loaned a foreman to the automatics plant in order to get the new furnaces going. This was a gesture which would have been considered soft headed a few years ago. But it had highly desirable effects.

While in the shop, the heat treat foreman noticed that the automatics were having trouble on high alloy steels. He suggested that the original bars be heat treated by his company in order to increase their machinability. This was tried with the result that machining speeds were increased 20% and scrap losses were reduced 45%. And as a bonus, while heat treating the original bars, the heat treating house was able to observe the variabilities which various lots had, and so was able to plan the final heat treatments to get better end products with less salt bath time and at lower operating costs.

Cost Controls

A smaller producer who liked to put all of his time into the shop and to neglect the "office end" was told by a purchasing engineer that he needed a production control system to reduce his costs and increase the uniformity of his castings. His reply was: "If I've got to have a control system, what is the matter with my taking on the one you use?"

He was loaned a production control man and the system was installed. The effects, of course, had the intended values. But there was a bonus.

Arrangements were made by which he sent duplicates of his filled-

out shop tickets with every shipment to this buyer. These tickets fitted in with the system in use in the buyer's shop and could go right on down the production line. And since the tickets inevitably betrayed the minor differences which must exist between various pourings of castings, the purchase engineer's production men were able to vary their procedures in accordance with their interpretations of the tickets. This bonus represented at least a 5% reduction in the average costs of processing these castings.

And as the production men studied individual lots the purchase engineer was able to tell this producer and all others who shared this business to aim at some qualities in castings and avoid others. The desired qualities had been laid down in the original specifications, of course. But this studying of the shop tickets from the foundry in the light of what happened on the production line enabled the purchase engineer to talk more definitely about the "plus values", the properties which are desired but which cannot be specified because no honestly managed shop could guarantee to analyze and hold them as specifications.

Product Development Work

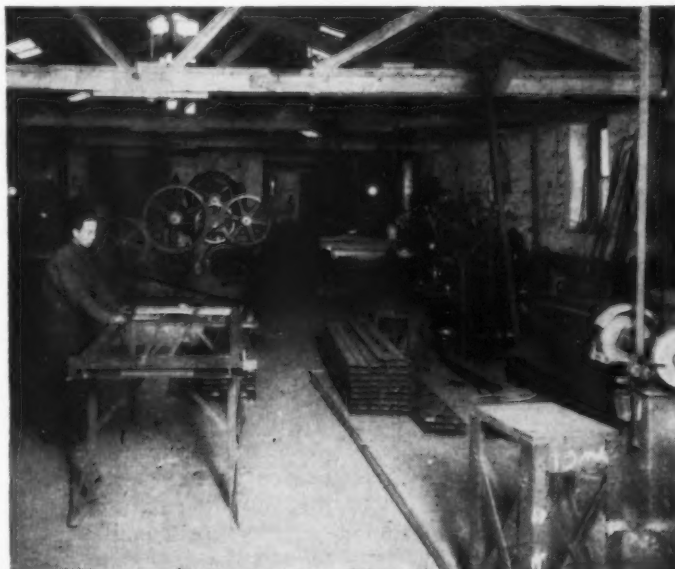
When developing new products and when working to unusually close specifications the specialized adaptability of the smaller producer can be highly valuable.

A new device requiring high rotating speeds and with one moving part acting as the support for others

(Please turn to page 342)

Facilities of the smaller producer should not be overlooked as a desirable source of supply.

Sharing the know-how on special techniques helps both the buyer and the producer.



CUTLER-HAMMER'S Purchase Forms

By B. M. Horter

Director of Purchases
Cutler-Hammer, Inc.
Milwaukee

UNIT OF MEASURE		PUR. COST																			
CONVERSION		PURCHASED-ORDER RECORD CARD		FORM-4-122		B-10															
CUTLER HAMMER INC		PURCHASER		VENDOR																	
NO		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
1		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
2		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
3		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
4		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
5		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
6		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
7		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
8		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
9		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
10		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
11		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
12		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
13		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
14		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
15		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
16		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
17		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
18		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
19		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
20		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
21		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
22		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
23		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
24		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
25		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
26		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
27		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
28		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT		DAYS		DEL. DUE		TOTAL	
29		NAME		QTY		UNIT		PRICE		ORDER NO.		QUANTITY		WEIGHT</							

The Stores Ledger Card is a part of a complete inventory control system. It is maintained for all items normally carried in stock and identified by a part number. When the stock of such an item reaches a predetermined minimum, the Stores Ledger Card is sent to the Purchasing Department for ordering. At the same time, the quantity needed and the date on which it is needed in the plant are determined and indicated on the form.

When items are needed that are not normally carried in stock, the using department makes out a Request for Purchase. This form is made out in duplicate. The white original is sent to the Purchasing Department, and the yellow copy is retained. When the order is placed, the order number and vendor's name are filled in on the white copy, which is returned to the using department, and the yellow copy is destroyed.

[illegible][illegible]

When either of these types of requisition is received in the Purchasing Department, it is sent first to the Pricing Section. Here, Price Record Cards are maintained, showing information as to vendors manufacturing each part number, their current quotations, where the tools are located, etc. Reference to these cards indicates to the Buying Section all the pertinent competitive conditions on the item requested.

If price information is not available from department records, a Request for Quotation is issued to an appropriate list of vendors. This form is made out in quadruplicate. The first three copies are sent to the vendor, who returns two with price and delivery promise, retaining the third copy for his files. The fourth copy is retained in the Purchasing Department pending receipt of the vendor's bid. The information is recorded in the Pricing Section for future reference.

After the Buying Section determines the vendor and the ordering quantity, the Purchase Order is written. There are five copies, the original and an acknowledgment copy being sent to the vendor. The face of the three office copies is blank, showing only the typed purchase information. The reverse side is ruled for pertinent working entries. The Purchasing Department copy is on white card stock, folded to fit a 5 x 8 visible-type open order file. It is a permanent record of follow-up, receipts, and invoices.

The green copy of the Purchase Order is also folded and kept with the white copy until the order is completed; it is then used as a voucher copy to authorize the payment of vendor's invoices. The yellow copy is sent to the Receiving Department, and is used as a record of all deliveries applying against the Purchase Order.

[illegible]

CUTLER-HAMMER INC. *Pioneer Electrical Manufacturers*
MILWAUKEE 1, WISCONSIN

PURCHASING DEPARTMENT

PURCHASE ORDER
NUMBER _____
DATE _____

CHANGE NOTICE
PLEASE CHANGE OUR ORDER AS FOLLOWS:—

CHANGE NOTICE
NUMBER _____
DATE _____

QUANTITY _____ DESCRIPTION _____ CH PART NO. _____

WANTED HERE YES _____ NO _____

SHIP TO _____
DELIVER TO _____
CHARGE ACCT. NO. _____

DEPT. NO. _____

THIS ORDER VOID UNLESS SIGNED
By Bm Horton
Purchasing Agent

THE CONDITIONS PRINTED ON REVERSE SIDE ARE PART OF THE ACCEPTANCE OF THIS ORDER.

ACKNOWLEDGMENT OF CHANGE ORDER
THIS ACKNOWLEDGMENT IS A PART OF OUR RECORDS AND MUST BE RETURNED TO US IMMEDIATELY IF SHIPMENT IS MADE UPON RECEIPT OF ORDER—ATTACH THIS ACKNOWLEDGMENT TO YOUR INVOICE.

CUTLER-HAMMER, Inc.
P. O. Box 463-464
MILWAUKEE 1, WIS.

We hereby accept your order subject to the conditions you specify.

We have entered same as our order No. _____ Via _____ WIS Ship _____
(Specify Defective Shipping Date Here)

From _____ To _____
WIS Bill At _____
(State if Price is Actual or Estimated)

Remarks _____

Signed _____

PURCHASED MATERIAL RECEIVING REPORT

FROM _____

PURCHASE ORDER NO. _____

PART NO. _____

PARTIAL AMOUNT RECEIVED _____

DESCRIPTION _____

WHEN INSPECTED SEND TO DEPT. RECEIVED BY _____ DATE _____

THIS REPORT TO BE SENT TO THE PURCHASING DEPARTMENT

PART NO. 3

Receiving Reports (3 x 5½) are made out in triplicate. Copies are sent to the Purchasing Department and to the using department. The third copy is a tag, attached to the material.

Any changes in connection with Purchase Orders already issued are handled by means of a Change Notice, numbered to correspond with the original order. Five copies are made, having the same distribution as for the Purchase Order, and the office copies are filed with the Purchase Order record copies. An acknowledgment of Change Notices is required from the vendor.

When material is received, it is inspected for compliance with the purchase specifications. If any defects are found, the Inspection Department makes out an Inspection Report which is sent to the Purchasing Department. The first two copies are on shorter sheets. These are signed by Purchasing, the first being sent to the vendor and the second used as a packing slip with returned merchandise. The third and fourth copies provide additional space on which Stores or Production Departments indicate their recommendations for disposal of the defective items, and Purchasing enters a record of the final disposition. The third copy is retained in the Purchase Department and the fourth copy is returned to Inspection.

CUTLER-HAMMER INC. *Pioneer Electrical Manufacturers*
315 N. 12TH STREET MILWAUKEE 1, WIS.

INSPECTION REPORT
DEFECTIVE PURCHASED MATERIAL

DATE _____ VENDOR _____ DESCRIPTION _____ LOCATION _____

ORDER NO. _____ PART NO. _____ P. O. NO. _____ DRAWING NO. _____

AMT. ON ORDER _____ AMT. RECEIVED _____ AMT. DEFECTIVE _____

DESCRIPTION OF DEFECTS _____

PURCHASING DEPARTMENT _____

DEFECTIVE MATERIAL CHARGED TO _____ INSPECTION DEPARTMENT _____

SUGGESTED DISPOSITION _____

STORES OR PRODUCTION _____

FINAL DISPOSITION _____

REPLACEMENT ORDER _____ PURCHASING DEPARTMENT _____

How Does Consolidated Military Procurement Affect the Supplier?

In enacting the National Security Act of 1947, Congress charged the Munitions Board with the responsibility of planning for "greatest practicable allocation of purchase authority of technical equipment and common use items on the basis of single procurement".

In the past 12 months, the National Military Establishment has made definite strides toward this stated aim. Outstanding examples include the consolidation of all military procurements of photographic materials to be purchased by the Air Force, the purchase of all hand tools destined for military use by the Navy, and the purchase of all automotive equipment by the Army. It should be recognized, however, that the purchase of some commodities were coordinated prior to passage of the National Security Act.

There has, however, been no means of measuring the impact of the new policy, other than by direct approach to the industries which have been affected by change. This is no matter for idle curiosity. Two Congressional agencies have asked for information on the progress of the military toward consolidating purchase, and it is anticipated that specific data will be called for by Congress during the forthcoming session.

Mere use of the term "single department procurement" tends to oversimplify the purchasing techniques which are now being used and which in some measure represent a merging of military procurement.

Actually, there are two variants in single department purchasing. The first, by virtue of its greater importance, is the assignment of commodity purchase requirements to a single department.

The second is the assignment of a plant to a single department, even though the actual output of the plant might be going to more than one department. Such instances are usually spotted in the aircraft industry, where one engine plant producing for the Air Force and the Navy may be handled solely by the Navy for procurement purposes.

Munitions Board seeks facts on which to base procurement policies.

Varied techniques available in allocation of purchasing authority.

Suppliers' experience with military orders provides most practical guidance.

By Herbert L. Brown

Procurement Consultant to Chairman
Munitions Board
National Defense Establishment



Donald F. Carpenter
Chairman, Munitions Board

In private life, Mr. Carpenter is Vice President of the Remington Arms Company and Member of the Corporation of the Massachusetts Institute of Technology. Prior to his appointment as Chairman of the Munitions Board last September, he served on the Industrial Advisory Group and Chairman of the Military Liaison Committee of the Atomic Energy Commission, and as Deputy to the Secretary of Defense in atomic energy matters.

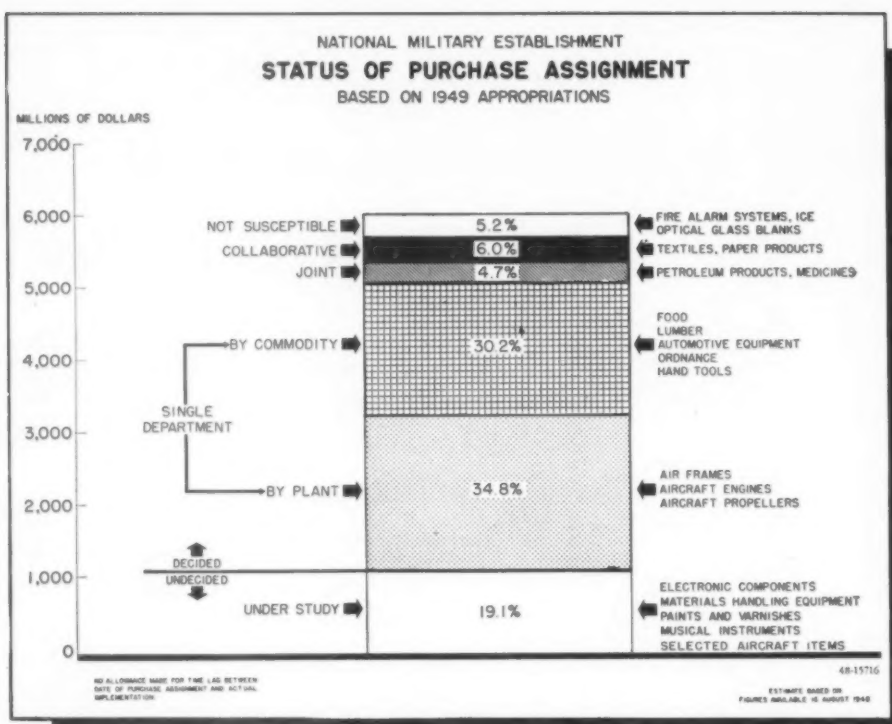


Herbert L. Brown
Procurement Consultant

Mr. Brown was a Supervisor of Purchase Analysis at the Ford Motor Company, Dearborn, Michigan, when he was called to Washington early this year to assist in the study of Federal procurement methods being conducted by the "Hoover Commission". He is currently on special assignment as consultant to the Chairman of the Munitions Board.

Then there are the other techniques of procurement, where some of the purchasing functions are either merged or represent close collaboration between the departments. The Joint Procurement technique is one instance. An example of this proce-

cedure is the purchase of medical supplies. The purchasing is done by mixed Army and Navy personnel (later to be joined by Air Force personnel), who act as a unit to purchase the requirements of all the departments. Net effect of this proce-



ture, as far as the supplier is concerned, is similar to single purchase procedure.

There is also collaborative procurement, as in the case of textile purchasing, where the departments maintain separate offices, but in the same building. They advise each other on their requirements and time the placement of their purchases considering each other's problems.

While the variants of single department procurement are being considered, the primary interest of the Munitions Board staff at this time is to obtain data concerning the effects of single department procurement of commodities.

To obtain this data, the Munitions Board has directed that a survey be made to determine how consolidation of military procurement has affected the companies which are supplying the items consolidated.

The survey will be in the form of a questionnaire; subject to the concurrence of the Bureau of the Budget, which will be sent to suppliers of items which have been affected by the single department procurement policy. Procedure will be to select a group of items where the change will have been operative for a period of time, and address the questionnaire to the top management of the companies supplying the items.

In responding to the questionnaire, the top management level will route the questions to the departments con-

cerned. Where the question involves lead time in purchasing, the Purchasing Agent will be consulted; specific production questions will be routed to the production officials most intimately concerned with the production run of the military item.

The questions are being prepared in consultation with industry spokesmen; survey specialists have been consulted for advice on methods to be used, and to what extent qualitative replies can be expected. Industrial association executives have advised on production information which the questionnaire can be expected to yield.

In addition to the questionnaire, the Munitions Board staff will personally interview a selected number of military contractors to obtain more elaborate case studies.

The importance of developing this information is that it will provide factual data to guide the course of military procurements. In following a policy of centralization of purchasing, the Munitions Board is nevertheless aware that there are certain pitfalls in over-centralization. The basic question is how far to go in this direction to yield the greatest economy, efficiency, and guarantee of desired quality and adequate supply.

Of major importance in determining the effectiveness of coordinated purchases is an evaluation of whether the item is made available for use by the Armed Forces in the right quan-

tity, at the right place, and at the time needed. This determination can best be made by branches of the National Military Establishment which will consume the items procured as a single purchase.

By far the most important aspects of measuring the effectiveness of coordinated procurement are whether this method of buying will facilitate the production and industrial distribution of supplies, equipment and material in time of war, and the effect of this procurement on the national economy. On these questions, industry must supply the answers.

To determine what benefits industry may have derived from single procurement, it is well to consider some of the objectives which such procurement was intended to attain.

Obviously, the National Military Establishment exists solely for the purpose of providing effective combat forces in event of military emergency—and "effective" means well-equipped and well-provided. In other words, the primary emphasis is on whether the method of procurement produces sufficient supplies of desired specification and quality.

A secondary consideration, but nonetheless of major importance, is the economy of procurement. On this score, the Munitions Board is attempting to discover whether suppliers receiving consolidated purchase orders effect any economies in delivery, either through the size of the purchase orders, the extended delivery time made possible through such a purchasing program—or economies in manpower, material use, or machine time made possible by the single procurement technique.

Still another purpose of the survey is the determination of what effect single procurement will have on the economy of the country—whether consolidation has had, or will have the effect of squeezing out certain suppliers; whether these suppliers might be the smaller companies whose output might not be needed at this time, but which might be badly needed in an emergency.

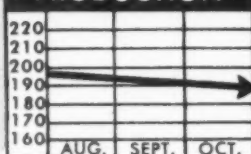
The availability of manpower and utilization of natural resources are likewise to be considered in the light of drastic changes in military purchasing. It is well, in this regard, to recall the high percentage of industrial facilities required to maintain an all-out war economy.

It wasn't enough, during the last war, to channel the major, or most efficient producers into war production. The best indication of the need for widespread participation, even at

(Please turn to page 320)

Where We Stand

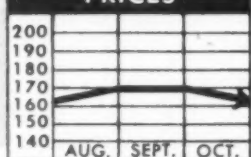
PRODUCTION



Today's Business Trends As
Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1935-39=100	188 (est.)	190	187	- 1.0	+ 0.5
Steel Production (Weekly)	000 net tons	1,786	1,703	1,699	+ 4.8	+ 5.1
Electric Power Production	mil KWH	5,482	5,470	4,958	+ 0.2	+10.6
Bituminous Coal Production	000 net tons	11,870	12,236	12,839	- 2.9	- 7.5
Auto, Truck & Bus Output	units	113,300	95,353	93,224	+18.8	+21.5
Petroleum Output	000 bbls	5,535	5,531	5,245	-	+ 5.5
Engineering Construction	000 \$	142,204	116,508	121,579	+22.0	+17.0

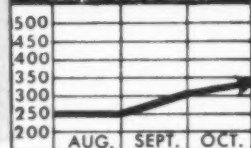
PRICES



All Commodities (Bur. Labor Statistics)	1926=100	164.6	168.0	158.0	- 2.0	+ 5.8
Semi-Manufactured Articles	1926=100	158.3	158.6	152.1	-	+ 4.0
Raw Materials	1926=100	176.7	180.9	175.0	- 2.3	+ 0.9
Manufactured Products	1926=100	160.5	163.9	151.7	- 2.0	+ 5.8
Steel Billets, Pittsburgh	gross ton	\$58.24	\$58.24	\$45.00	-	+29.4
Steel Scrap, heavy melting, Pitts.	ton	42.75	42.75	40.25	-	+ 6.2
Copper (Electrolytic)	lb.	.23 1/2	.23 1/2	.21 1/2	-	+ 9.0
Cotton, mid., 15/16"	lb.	.3215	.3240	.3287	- 0.7	- 2.1
Rubber, (Rib-smoked sheets)	lb.	.22 1/2	.23 1/8	.21 1/8	- 3.7	+ 5.3
Wheat (No. 2)	bu.	2.51	2.48 1/4	3.27 1/2	+ 1.1	-23.3

TRADE

(Dept. Store Sales)



Dept. Store Sales Index (Fed. Res)	1935-39=100	337	308	304	+ 9.4	+10.9
Commercial Failures (Dun & Bradstreet)	no.	94	94	75	-	+25.0
Freight Carloadings	cars	891,811	895,279	956,862	- 0.3	- 6.8

FINANCE

Stock Prices (Standard & Poor's)	1926=100	128.2	125.6	123.3	+ 2.0	+ 4.0
Bank Clearings (New York) -	mil \$	5,889	-	6,363	-	- 7.4
Federal Reserve Credit	mil \$	23,967	21,834	22,807	+ 9.7	+ 5.0
Currency In Circulation	mil \$	28,284	28,287	28,656	-	- 1.3

Materials & Markets

STEEL

As production hit new highs during last month, and demand continued unabated, steel prices began edging up, with prospects of further rises occurring in the near future.

During the week this was written, production of ingots and steel for castings were the second highest in the history of the industry and larger than ever before in peacetime. The operating rate of steel companies having 94% of the steel capacity of the industry was 99.1% of capacity, equivalent to 1,786,300 tons of steel ingots and castings, compared to 1,775,400 tons a week previously, 1,699,200 tons a year ago; and 1,281,210 tons for the average week in 1940, the highest prewar year. The tonnage was only 5,000 tons lower than the all-time weekly record of 1,791,300 tons in the wartime week of April 24, 1944.

Recent price increases by some companies on certain types of finished steel (hot-rolled sheets and strip were advanced by an estimated \$13 to \$15 a ton in the middle of October by one company), has led observers to predict a general upturn within the next few months. Rising costs of labor, materials and freight will be offered as background for the increases, if and when they come, it is believed. As an example, it is pointed out that pig iron prices in the United States at this time averaged \$46.29 a ton compared with \$36.13 a year ago and the scrap composite was \$43.33, compared with \$39.75 a year ago. There have also been rises in the prices of nickel, ferromanganese, zinc, and other items. In addition, the nation's railroads have recently petitioned for a 13% increase in freight rates on coal and iron ore, which, if granted, will tend to push costs further upward, and in turn register pressure on the steel price structure.

Scrap continues to be an outstanding problem for producers, but some hope has been expressed for a better supply as foreign sources are being developed. The first boatload of German steel scrap for one large company, carrying 9,438 tons, was scheduled to arrive in Philadelphia on October 25. It was described by a company official as "No. 1 heavy melting steel scrap of a much better grade than is generally available from domestic sources."

With the steel voluntary allocation program nearing its end, speculation has been raised about mandatory allocations for the next year. Failure of some companies to obtain necessary steel, and resultant complaints to their representatives in Congress, has led some quarters to believe that the legislators will seriously consider a mandatory allocation law. Fol-

lowing a vigorous protest by Secretary of the Interior against a steel industry refusal to channel steel to the oil and coal industries, it was reported from Washington that Commerce Secretary Sawyer was planning to ask the steel people to reverse their stand.

NON-FERROUS METALS

Activity in the non-ferrous metals market during the month was marked by price rises in aluminum, antimony and a reported rise in zinc, and continued high demand for these metals, as well as lead and copper.

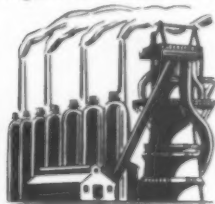
Aluminum Company of America increased the price for virgin ingots and pigs by 1 cent per lb., bringing them to 17 cents and 16 cents, respectively, and making them comparable to prices quoted by other primary producers. The company also announced that higher prices will go into effect on aluminum sheets, rounds and other finished products.

Describing increases in production costs as the basis, the National Lead Company advanced the price of antimony to 38 1/2 cents per lb., f.o.b. Laredo, Tex., a boost of 3 1/2 cents.

Late in the month, it was reported that one of the leading producers of zinc had sold the prime western grade, East St. Louis, for delivery to the end of 1948 at 15 1/2 cents per lb., a 1/2 cent increase over the quotation that has been in effect since July 28. Supplies of the metal are still short due to summer strikes, and it is believed in some quarters that a general price rise may be in the offing.

MISCELLANEOUS

Lumber supplies continue to improve, but a "continuing lack of balance" exists at retail outlets, according to the Department of Commerce. Prices in general are at "new average highs", and prices for lower grades generally were "remaining firm", the report said. . . . Paperboard production at mid-month had risen 3.6% over the same period last year, and new orders were up 14.5%. Unfilled orders were down 13.7%. . . . Stocks of petroleum products for winter consumption have been increased by large amounts in the last month, despite the loss in production brought about by the California oil refinery workers' strike which was still in effect at this writing. In the same period, according to the American Petroleum Institute, refinery stocks of gasoline have shown less of a seasonal drop than might have been expected.



MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Indexes of Value of Manufacturers' Sales
(Average Month 1939=100)

Total Manufacturing.....	287
Durable Goods.....	301
Iron, Steel & Prod.....	296
Non-Ferrous Metals and products.....	327
Electrical Machinery and Equipment.....	349
Machinery, exc. elec.....	295
Automobiles & Equip.....	326
Transportation equip. except autos.....	406
Furniture and finished lumber products.....	251
Stone, clay & glass products.....	226
Other durable goods.....	258
Nondurable goods.....	279
Food & Kindred prod.....	291
Textile-mill products (exc. apparel).....	275
Leather & products.....	277
Paper & allied prod.....	295
Chemicals & allied prod.....	287
Petroleum & coal prod.....	257
Rubber products.....	312
Other nondurable goods.....	213

Indexes of Book Value of Manufacturers' Inventories
(Average Month 1939=100)

Total Manufacturing.....	252
Durable Goods.....	272
Iron, Steel & Products.....	199
Nonferrous metals & products.....	262
Electrical mach. & equip.....	375
Machinery, except elec.....	276
Automobiles & equipment.....	452
Transportation equipment, except autos.....	644
Furniture & finished lumber products.....	212
Stone, clay & glass products.....	161
Other durable goods.....	201
Nondurable goods.....	235
Food & kindred products.....	213
Textile Mill products (excl. apparel).....	223
Leather & products.....	207
Paper & allied products.....	253
Chemicals & allied products.....	261
Petroleum & coal products.....	169
Rubber products.....	258
Other nondurable goods.....	212

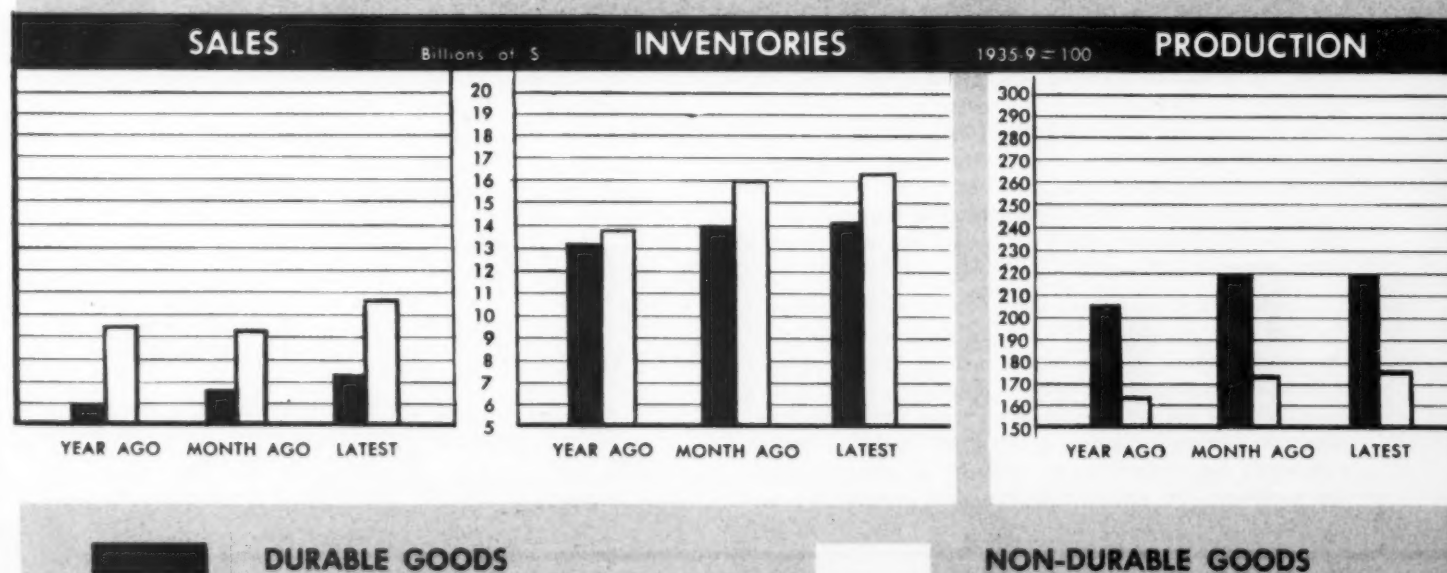
Indexes of Manufacturers' New Orders (Average Month 1939=100)

All Industries.....	231
Durable Goods.....	261
Nondurable goods.....	213

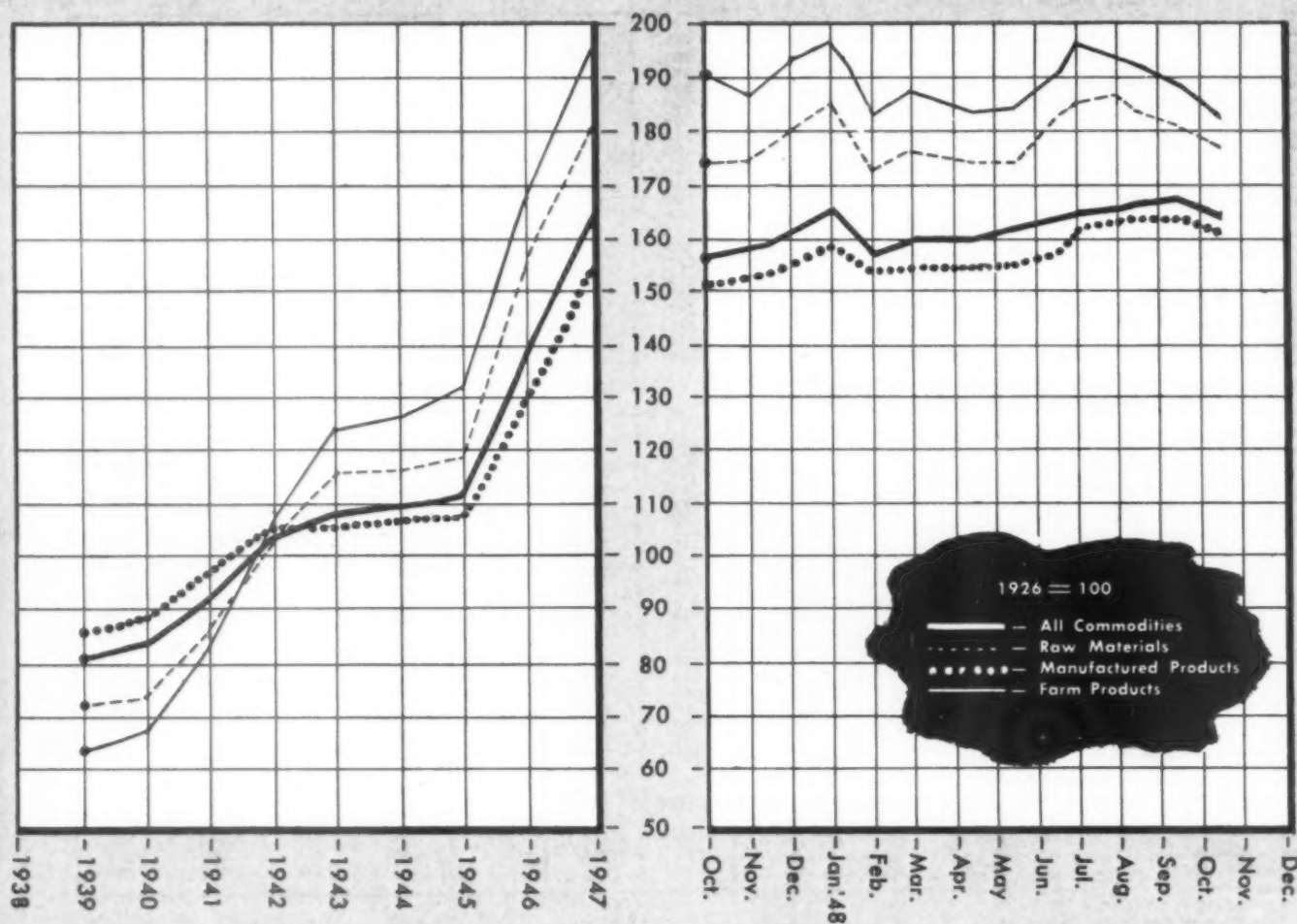
	1947	1948					
	August	Mar.	Apr.	May	JUNE	July	August
Total Manufacturing.....	287	332	324	324	336	308	338
Durable Goods.....	301	365	352	350	369	333	370
Iron, Steel & Prod.....	296	345	325	340		301	363
Non-Ferrous Metals and products.....	327	410	415	419		350	403
Electrical Machinery and Equipment.....	349	442	440	431		410	424
Machinery, exc. elec.....	295	363	350	354		317	337
Automobiles & Equip.....	326	435	413	382		438	461
Transportation equip. except autos.....	406	501	476	467		457	494
Furniture and finished lumber products.....	251	273	256	248		226	260
Stone, clay & glass products.....	226	252	274	269		267	283
Other durable goods.....	258	271	255	263		248	290
Nondurable goods.....	279	306	307	308	317	294	320
Food & Kindred prod.....	291	297	299	303		310	305
Textile-mill products (exc. apparel).....	275	345	333	326		269	336
Leather & products.....	277	300	266	232		256	311
Paper & allied prod.....	295	333	332	344		301	344
Chemicals & allied prod.....	287	315	334	327		292	328
Petroleum & coal prod.....	257	322	318	335		337	335
Rubber products.....	312	252	312	344		339	354
Other nondurable goods.....	213	341	326	313		245	266
	284					254	344
Total Manufacturing.....	252	271	271	274	277	281	283
Durable Goods.....	272	281	284	285	288	290	292
Iron, Steel & Products.....	199	205	206	213		226	230
Nonferrous metals & products.....	262	257	262	263		271	279
Electrical mach. & equip.....	375	384	388	395		398	399
Machinery, except elec.....	276	295	297	295		298	299
Automobiles & equipment.....	452	473	472	475		475	473
Transportation equipment, except autos.....	644	619	626	631		635	626
Furniture & finished lumber products.....	212	242	255	259		259	261
Stone, clay & glass products.....	161	165	163	159		159	172
Other durable goods.....	201	202	204	192		183	183
Nondurable goods.....	235	262	261	265	268	274	276
Food & kindred products.....	213	243	236	230		237	234
Textile Mill products (excl. apparel).....	223	255	253	256		261	261
Leather & products.....	207	241	241	254		264	255
Paper & allied products.....	253	276	276	287		305	310
Chemicals & allied products.....	261	289	285	287		284	285
Petroleum & coal products.....	169	182	186	197		207	219
Rubber products.....	258	302	293	302		289	287
Other nondurable goods.....	212	329	332	345		229	241
	297					405	405
All Industries.....	231	257	252	243	265	246	259
Durable Goods.....	261	314	292	266	307	291	315
Nondurable goods.....	213	223	228	230	240	219	225

Source — Department of Commerce, Revised Series

SALES, INVENTORIES AND INDUSTRIAL PRODUCTION



The Price Picture



Straws in the Trade Wind

American railroads have asked the Interstate Commerce Commission for a 13% rise in basic freight rates. A previous plan to ask for an 8% rise was amended to the higher rate following a wage increase won by the conductors' and trainmen's unions . . . Northeast Airlines has asked the Civil Aeronautics Board to increase air freight rates by an average of 6 cents a ton-mile. This represents the first action by any air carrier since the end of the war to obtain a price increase on freight.

American Iron and Steel Institute figures show that in the first nine months of 1948 more steel was produced than ever before in peacetime and the total was only 2% less than in the full year of 1946 . . . Stating that from 10 to 12% of the country's total strip and sheet steel production is moving in the gray market, a House committee has called for a voluntary program to fight the problem, "to encourage free and competitive en-

terprise, as opposed to controls." . . . Canada has agreed to limit its imports of iron and steel from the United States to 200,000 tons during the last three months of 1948, an 18% drop.

Sinclair Refining Co. has opened a new research laboratory at Harvey, Ill. for work on a variety of projects, including production of oil from shale and coal . . . Standard Oil Development Co. recently opened a new petroleum research center at Linden, N. J. E. V. Murphree, president, revealed at the opening that petroleum research has devised basic processes for production of super gasolines needed for high-compression automotive engines now being developed by car makers.

Personal income increased to an annual rate of \$215,000,000,000 in August from the \$213,000,000,000 rate in July, according to the Department of Commerce.

Materials Control Supports Manufacturing Schedules

By Fred M. Burt

Monthly stock records and production program are correlated for streamlined procurement.

Accurate and close control of 600 key items maintained on tabulating equipment.

Purchasing Agent and two clerical assistants handle \$2,000,000 purchasing program.

EVERY working day, at the Inglewood plant of the Hallett Manufacturing Company, in the Los Angeles industrial area, more than forty small Diesel engines are completed and test-run. Along with the production of quantities of filtered ignition shielding for all types of marine engines, this volume of manufacturing adds up to diversified procurement approaching a two million dollar yearly value. Thanks to a well coordinated system of material and production control, and a planned procurement program, this purchasing operation is handled with the issuance of an average of twenty purchase orders per day, originating in a compact and efficient department consisting of Purchasing Agent Frank Asnon and two young lady assistants. Eleanor Evans acts as secretary and assistant buyer, and does the necessary follow-up work. Nancy Froming operates the tabulating machine that compiles the records for purchase requirements, materials and production control, and incidentally turns out the payroll records and the further distribution of labor costs.

To begin with, regular production forecasts are made in executive meetings, based on existing order backlogs, anticipated orders as determined from reports by salesmen, distributors, and other sources. Each month, Mr. Asnon participates in meetings and analyses that result in the outlining of the next month's anticipated production. These figures are checked against the record of production materials on hand and on order. In weekly meetings with Elton Hallett, in charge of manufacturing and engineering, more immediate require-

ment analyses are made, plus the consideration of requirements for special orders, items not covered in the regular forecast. While all models of the Diesel engines have many interchangeable parts—an engineering standardization policy that has many obvious advantages in manufacturing and parts replacement—many accessories must be procured for special units such as the generator and pump sets.

The basic, large quantity purchases include all parts and materials for manufacturing parts, as listed in the materials breakdown of the basic models. A Kardex "case history card" has been set up for every item in this breakdown—a total of about 600 items, whether the part is manufactured by Hallett in whole or in part, or is purchased as a complete unit. Each item is identified by part number and description, and by the



Frank Asnon
Purchasing Agent



Automatic sorting and tabulating equipment for handling materials records makes for accurate, fast, and efficient control.



Standardized engineering design and interchangeable parts help to keep the key items in a \$2,000,000 purchasing program down to a total of about 600.

product models in which it is used; all of this information appears in the visible index section at the bottom of the card.

This record starts with a physical inventory, with spot check counts from time to time. At the beginning of each month, the actual "on hand" inventory figure is entered in the horizontal "Inventory" column at the bottom of the card. As deliveries are received against orders issued, the quantities are entered in the proper monthly column, immediately above the starting inventory figure for that month and opposite the purchase order entry on which they apply. No stock withdrawals are entered, but usage is reflected in the new monthly inventory figures posted at the start of each month. A transparent colored signal flag is set along the bottom edge of the card whenever a new entry is made, indicating the currently applicable figure.

To the left of the inventory figure is a tabulation showing the number of units of the item used in each product model. In the specimen illustrated, for example, two units are used on all models. Thus a comparison of the number required and the number on hand quickly tells how many engines can be manufactured from the available supply of parts.

The information regarding receipts to stock is derived from a variety of sources, depending on the origin of the added material. All items coming in through the receiving department for the stockroom are listed daily on a

Receiving Register form, which is turned over to Purchasing. Other standard parts coming into the stockroom from company departments or from outside vendors are listed on a Stockroom Receipts form. Parts delivered to the stockroom from the foundry are listed on the Daily Casting Report. In this manner, all daily additions to stock are recorded and reported to Purchasing. All of these receipts are key-punched daily on cards set up for each item. At the end of each week, total receipts of each part are machine tabulated and

posted to the receipts column of the comparable Kardex record.

Along with the tabulating machine cards used to record stock additions, another set of cards is used to record withdrawals from stock, this information coming from the monthly report of engines produced, and from the reports of withdrawals through spoilage or other causes. Then both sets of cards are sorted in the machines, withdrawal deductions are automatically made, and a monthly report is compiled and tabulated on 22 x 8½" sheets. In vertical col-

Materials control starts with an accurate inventory record of each production item at the first of each month.

COMMERCIAL DESCRIPTION										UNIT COSTS			LIST	WEIGHT			
										MAT	LABOR	O.P.					
Timken #5584 Cone																	
VEN.	A	TIMKEN		B	C	D	E	F	G								
DATE	VEN.	P. O. NO.	QUANT.	UNIT COST	UNIT FRY.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
9/11/46	A	28937	3000	2.46		1138	867										
11/21/46	A	29858	1200	2.46					1500								
3/19/47	B	30372	6000	2.45						2000							
</																	

In succeeding columns on the tabulated summary, the inventory is costed under the headings of labor costs, material costs, and totals, comprising the basic data for the monthly cost report. These figures are calculated from individual cards for each part number, on which the current material costs have been punched, along with any specific labor costs that may be involved.

ramifications of payroll calculations and recording, with check issuance, and all of the cost distribution, labor and material, charged against every individual part. A complete monthly report is compiled to show the cost of the different manufacturing operations on each part. When the monthly total is divided by the number of parts produced, single unit costs are obtained. These are listed in a vertical column affording direct comparison with the record of corresponding costs in the previous months. Thus management has a succinct report of cost comparisons to call attention to favorable or unfavorable trends, showing where attention and emphasis should be directed for improvement.

An examination of a number of these reports shows rather a remarkable downward cost trend, resulting from new manufacturing efficiencies through the development of better procedures and the use of new equipment. For instance, a camshaft cost dropped \$1.83 per unit within a period of three months following the installation of a new cam-grinding machine. The Hallett organization is committed to the policy of knowing *for sure* about every detail of their costs from month to month, knowing then the best points of attack for further lowering of costs and increase of production. In addition it provides a precise knowledge of the results of every change in manufacturing procedure or equipment. How-

Additions to stock are noted from the Receiving Department Register, Stockroom Receipts from other departments, and the daily report from the Foundry.



ever, with the use of the tabulating machines, the cost of getting this information is comparatively very low, as evidenced by the small number of persons involved.

In relation to procurement, as the assistant makes the postings on the Kardex record, she keeps Mr. Asnon informed as to the status of stocks on hand and ordered, and the indicated needs for replenishment and manufacturing schedules. He then uses the Purchase Order working form to list the details of purchases to be made. From this work sheet, the Purchase Orders are typed and this information is in turn entered on the Kardex record, showing quantities on order to supplement the monthly starting inventory and receipts, and also indicating follow-up action that may be required or additional orders to be placed.

For non-production items such as operating supplies, a simple requisition form is used. Department heads are furnished with books of these forms in duplicate. In indicating their needs, they send the original copy to Purchasing, retaining the carbon copy in the books at the point of origin. A total of about ten such requisitions per day are handled in the Purchasing Department. For such purchases, the requisition itself is used as the worksheet, and the Purchase Order is typed from this form after approval by Mr. Asnon.

The Purchase Order is a simple form, made out in four copies, with snap-out carbon. The conditions and agreements, printed on the reverse

Stockroom inventories are closely correlated with monthly manufacturing schedules.

[illegible]

Purchase Orders for production materials and parts are first prepared on a Purchase Order Work Sheet. For operating supplies, the Requisition form serves this purpose.

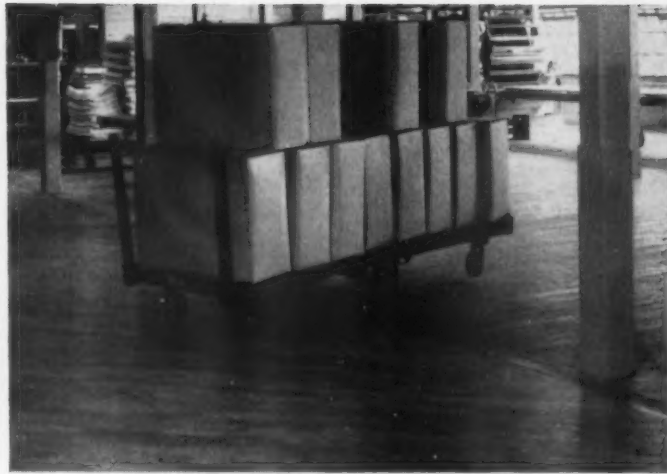
side, cover the basic considerations of patent guarantee, inspection, title to tools and materials, termination of the order, and conformance with price regulations. The original is sent to the vendor. The other copies are for Accounting (Accounts Payable), Re-

ceiving, and a working copy for use in the Purchasing Department, including follow-up action.

The Purchasing Department copy is filed alphabetically by vendors' names in a pillar file, with the accumulation of pertinent data on follow-



A well cared for asphalt tile floor enhances the attractiveness of this reception room.



Reconditioning and careful treatment make the old floor (right) almost indistinguishable from the new floor in the foreground.

Floor Maintenance for Fewer

Proper preparation of floor services is essential to good maintenance.

Adapt materials and cleaning methods to the type of floor and its usage.

Old floors can be reconditioned and kept safe with modern compounds.

●
By Paul V. Farrell

GOOD housekeeping in industry, like good housekeeping in the home, makes for greater safety, less expense, and improved personal morale of the people who have to see and use the premises every day. And one of the most important accomplishments of any good housekeeper is to obtain clean, safe, good-looking floors.

By literally starting at the bottom—on the factory and office floor—industrial maintenance today can make substantial progress in overcoming the increasingly difficult problems of accidents, rising costs, and impaired productivity.

Possible savings in money, human

suffering and worker efficiency through good housekeeping are dramatically illustrated in the figures of the National Safety Council gathered in its drive against industrial deaths and accidents. The Council points out that falls in general are responsible for one-fifth of the annual total of approximately 17,000 deaths, and one-sixth of the more than 2,000,000 accidents, in American industry. While the figures are not broken down to a specific number for falls due to poorly kept floors, it is significant that the council lists "slippery, wet, oily and worn floors" prominently on its list of causes of falls distributed in the form of Safety Instruc-

tion cards to employees. Another danger of oily and unclean floors emphasized by the Council is fire, which annually takes a tremendous toll in lives and money.

Safety and Economy

A thorough and systematic program of floor maintenance can promote safety and bring with it savings from lower absenteeism, increased productivity, and lower liability insurance rates. A good indication of the fact that there is a distinct possibility of savings is the availability to management of personalized accident and fire-prevention services from most casualty and fire insurance companies, all of which emphasize good floor maintenance.

Intelligently planned treatment of floors, in addition to the safety factor, is protection against future expensive replacement of floors that have become useless through a build-up of grime or dirt, worn away by attacks from fluids, acids, etc., or split and splintered from heavy traffic. The old saw about an ounce of prevention and a pound of cure works as well here as with any situation, as anyone paying today's prices for installation of new flooring well knows.

It is management's responsibility to select and provide the proper types



Application of a penetrating seal is an important part of any wood floor treatment program.



Emulsion type floor waxes containing a high percentage of carnauba wax give a hard, glossy, durable surface to linoleum, asphalt tile, rubber tile, wood, and cork.

Accidents and Lower Costs

of flooring, to set up a maintenance program and to schedule periodic inspections. The purchasing agent, as part of that management, is responsible for buying from among the multitude of cleaning materials and equipment those best suited for the type of floors in his plant and offices and those which meet and overcome the particular problems found there. He must see that the material is being used properly and economically, not only to accomplish the job at hand but insure the long life of the floor.

Specifications play as important a part in the matter of cleaners and cleaning equipment as in the purchase of other MRO items, and the buyer who fails to recognize modern methods of floor safety, beauty, and economy of maintenance is not doing his job properly. Simply "washing" or "waxing" a floor is not enough, and in fact may be useless or even dangerous in some applications. Yet, what should be an obvious condition is often overlooked, and time, money and effort go down the drain along with the wrong cleaning compound through improper knowledge or plain carelessness.

Not all floors are alike, even when made of the same basic materials. Some are older, more worn, exposed

to greater traffic and more rigorous operating conditions than others. Each maintenance program has to take these factors into consideration, but general rules can be set down for various types of floors, and if carefully and conscientiously carried out will do much to keep floors safe, good looking and well preserved. In difficult or unusual cases, the services of expert floor maintenance men and departments are available from a number of material and equipment manufacturers.

A regular program of maintenance, based on the type of plant and floor, and fitted in so as not to interfere

Photographs by courtesy of Asphalt Tile Institute, A. C. Horn Company, Oakite Products, Inc., Safety & Maintenance Company, L. Sonneborn Sons, Inc., Turco Products, Inc., and West Disinfecting Company.

with plant production, is fundamental. The three essential steps in the program are cleaning, sealing (except on certain types), and finishing. This cycle should be followed in all cases on new floors, but the frequency of cleaning and waxing will depend on the condition of the floor, on the requirements of the plant management as to cleanliness and luster, on the

Absorbent floor-drying compound used in oily, slippery areas not only helps prevent accidents but protects floors against rotting and deterioration.



TYPE OF FLOOR	CLEANING AND SEALING	WAXING AND MAINTAINING
Wood (unpainted)	Sand, or clean with a mild alkali cleaner. Sweep up or rinse thoroughly. Apply 2 or 3 coats of penetrating seal containing small amount of solvent. Steel wool each coat. Soap and water cleaning is not recommended.	Use solvent type or water emulsion, but latter only if seal has been applied previously. Buff each coat upon drying. Sweep or "dry" clean daily to remove surface dirt. Cycle of cleaning, waxing depends on local conditions.
Wood (painted)	Clean with solvent type neutral cleaner. Apply two coats of sealing preservative. Steel wool each coat.	Use solvent type or water emulsion wax. Buff each coat after drying. Maintain as above.
Concrete	Clean with warm soapy water, or use mild alkali cleaner. Avoid strong alkalies, oily compounds and volatile solvents. When floor is dry and free from oil and wax seal with two or more coats of preservative especially prepared for concrete.	Use solvent type or water emulsion wax. Buff each coat when dry. Avoid scouring powders, etc. in cleaning. Sweep daily. Clean and resurface four or more times yearly according to conditions.
Linoleum	Use mild neutral or linseed oil base cleaner. Do not use alkalies or scouring powder. Use as little water as possible. Rinse well, and dry thoroughly. Seal with same type of preservative used on wood floors.	Use solvent type or water emulsion wax. Spread on two thin coats. Allow first coat to dry completely before applying second. Sweep or "dry" clean daily. Go through cleaning cycle once yearly on the average.
Asphalt Tile	Wash with diluted warm suds solution of neutral soap. Don't use any cleaner containing gasoline, kerosene, alkali, free fat, turpentine, etc. Rinse thoroughly with clean water. On new floor, wait until tiles are tightly adhered to sub-floor before washing or waxing. Don't seal this type floor.	Use only water emulsion wax. Apply several successive light coats. Buff each coat when dry. Waxes containing solvents cause asphalt tile to soften and bleed. Sweep daily. Wash occasionally with diluted warm suds solution of neutral cleaner. Rinse well.
Rubber	Use neutral soap and rinse immediately. Do not allow any volatile solvents or cleaners containing them to come in contact with the floor. Do not use abrasive cleaners. Do not varnish or seal. If finish is partially destroyed renew by steel wooling, followed by waxing.	Apply two coats of water emulsion wax. Do not use solvent type wax. Buff each coat when dry. Sweep daily and avoid wet mopping.
Terrazzo or Marble	Wash with warm soapy water or neutral type cleaner. Rinse thoroughly with clear water. Seal with penetrant specifically compounded for terrazzo. Remove all excess sealer from surface.	Do not wax. Dry mop, brush or sweep daily. Wet mop occasionally according to conditions.
Cork	Use only neutral cleaner, no alkalies. Avoid using excessive amounts of water. Rinse and dry well. Use same sealer as used on wood. Apply two coats and rub into floor. Wipe off excess and allow to dry thoroughly.	Apply water emulsion wax in several thin coats, usually 3 to 6. Sweep daily with stiff brush. Apply 2 coats of wax occasionally and buff with No. 1 steel wool.
Magnesite Composition	Scrub with neutral cleaner of type used on terrazzo. Seal with same penetrant used for terrazzo. Remove excess material and allow floor to dry thoroughly.	For high lustre, apply 2 or 3 coats of water emulsion wax. Allow 15 or 20 minutes drying time between coats. Mop occasionally with mild solution of neutral cleaner if floor has not been waxed. "Dry" clean if waxed.



Concrete floors, typically subjected to heavy use, must be thoroughly cleaned, and kept clean, to stay in good condition.

general housekeeping program, the type of floor, kind of wax, amount of traffic, etc. The first sealing operation generally suffices for a considerable length of time, but careful attention should be paid to its condition so that a patch or entire new seal can be applied when spots begin to appear. The exceptions to the sealing process are rubber tile and ruberoid, soft asphalt composition, faience and slate.

Because most floor surfaces are porous, new floors should be thoroughly cleaned and then sealed. Unless the pores are sealed, dirt and moisture will settle in them and under the pressure of traffic this dirt will be ground in, shortening the life of the floor and marring its appearance. The use of steel wool after each coat will help to bond the coats more securely and leave the last coat properly prepared for waxing.

Quality cleaning products made by reputable manufacturers carry on their labels or instructional literature

recommendations for use on certain surfaces and warnings against use on other types. It is a good policy to follow these instructions carefully, inasmuch as they have been worked out carefully in actual tests. Generally speaking, strong alkalis in a cleaning solution are dangerous to both the individual using the material and the surface on which it is used. However, a mild alkali cleaner is suitable for cement, unpainted but well-sealed wooden floors, wood block floors and brick floors. For linoleum, painted wooden floors, cork tile, asphalt tile, rubber tile, and terrazzo, a neutral type soap is the best cleaner. Care should be taken to avoid the use of abrasive cleaning and scouring powders on easily scratched surfaces. Recommended types of cleaners for the various types of floors are shown on the chart accompanying this article.

The best cleaner will prove ineffective and even dangerous if its use is not followed by a thorough rinsing. Rinsing washes away the

residue of dirt and particles loosened by the cleaner, preventing them from being ground back into the floor. Equally important, a good rinsing clears away any of the film left by the cleaner or soap, which otherwise would cause dangerous slipperiness. The safest procedure is to use lukewarm water for rinsing all types of floors. Cold water only sets the dirt more firmly into the floor, and hot water may crack even hard surfaces by expansion.

Types of Floor Wax

Wax has been found to be the most suitable finish for most types of floors because it does not hold dirt and can be easily and thoroughly cleaned. The wax surface is not only attractive and easily renewed, but it offers protection against traffic and wear, thereby lengthening the life of the floor. Since it plays such an important part in floor maintenance, it is important to know the different types, their uses on particular kinds of floors, their properties, and the validity of claims made for them by their manufacturers.

Floor waxes in general use fall into two classes, volatile organic solvent class, known as paste and liquid waxes, and water-base emulsion class, known as water-emulsion waxes. The solvent class is usually made with turpentine, benzine, etc., puts a thicker coat of wax on a surface and requires more buffing than the water-emulsion type usually does. Because of the solvent it contains, this type of wax should not be used on certain floors, as indicated on the accompanying chart.

(Please turn to page 346)

The concrete floor of this garage has been sealed against dirt, oil and grease deposits by treatment with a hard, glossy preservative.



Modern detergents make manual floor cleaning procedure easier. Properly used, they help to promote plant safety and efficiency.



Progress in Designing and Testing Fibreboard Containers

By J. D. Malcolmson
Director, Products Development
Robert Gair Company, Inc.

Useful tests for containers must simulate the conditions of actual use.

Satisfactory container design depends on the type of product for which it is used.

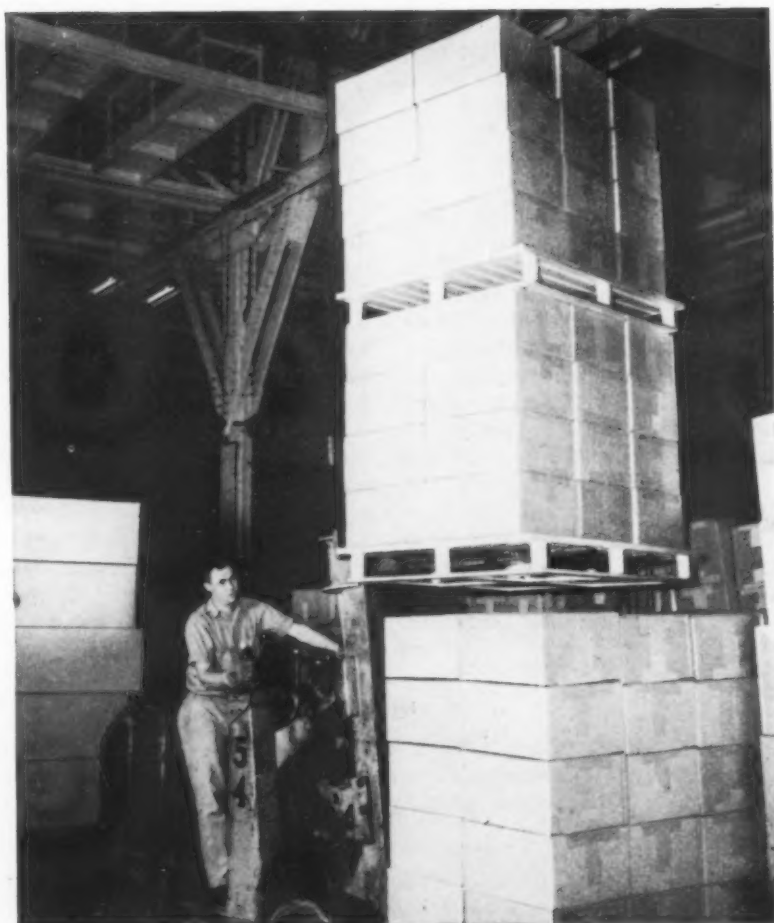
Testing of container materials requires standard conditions of temperature and humidity.

THE testing and designing of fibreboard containers is much more of an exact science today than it was even a few years ago. World War II greatly accelerated this technique because of the urgency to deliver American-made merchandise to all parts of the world. Victory literally depended on the safe arrival of ammunition, subsistence, clothing, and all the other military materiel, and in most cases the method of packing determined whether the merchandise arrived in usable condition. Many of us still shudder when we remember the experiences of the early days of the war and our chief consolation is the excellent showing that packaging made toward the end of the war.

The war also developed a large crop of top notch packaging engineers. These young men are now located as container salesmen, laboratory technicians and packaging engineers. Usually they can show the old timers a lot of new wrinkles in efficient packaging methods.

In the early days of the corrugated box, we used to develop a new container by hit or miss methods. If one scheme didn't work, we would try something else. If we had doubts, we would pack and seal the box and roll it down the back stairs—and usually we were afraid to look at the results. We made innumerable test shipments—one or two boxes at a time. Sometimes we suspected that our competitors must have got wind of the shipment and sabotaged it. I don't know anything more uncertain than the results of a

A talk delivered before the Freight Loss and Damage Prevention Committee, Great Lakes Regional Advisory Board, Cleveland, September 14, 1948.



Conditions of handling and storing determine the physical requirements of the container.

test shipment of a single box. It's too much like gambling, and technical men don't like gambling—much.

Then came the revolving drum tester (about thirty years ago) and we thought we had the last word in the technical evaluation of a container. As a matter of fact the drum was, and still is, a very valuable test-

ing tool if properly used. It revealed the container's ability to protect the contents as well as to retain them, but it didn't actually drop the box nor did it inflict severe impacts. It didn't measure resistance to compression nor a lot of other important properties of a shipping container.

Today we know that there is no

universal testing machine. The real pay-off is how the package stands up under the actual conditions to which it is to be exposed. One way to find out is to make hundreds of test shipments—enough to “average out” the abnormal damage. But this is a costly and time consuming procedure. It is too much like burning down the house to roast the pig.

The next best method is to devise testing instruments that will measure the specific conditions we are most interested in, and that is just what has been done.

Thus a *compression test* is used on merchandise such as soap flake cartons, where stacking loads must be carried by the walls of the container and not by the contents. Such a test, however, means little when applied to the top of a case of canned goods because the cans themselves are so strong in that direction. End compression on can cases is valuable but a drum test is even better.

Glassware and liquids in glass are naturals for a drum tester, although a *drop test* is preferred by some shippers. Heavy or massive articles such as washing machines or refrigerators in fibreboard are best tested with an *impact tester* such as the Conbur. Case eggs are often subjected to a *vibration test*.

The components of fibreboard boxes are also subjected to various tests. This is really another subject, so we will only mention some of the more important tests such as the Mullen, Cady, Caliper, Rigidity, Puncture, Weight, and Score.

Many large shippers have installed laboratories of their own where one or more of the desirable container qualities can be evaluated with stand-

ard testing machines. These instruments can be purchased or some of them, such as a compression tester, can be constructed at home. Most of the home made compression testers are built over a platform scale.

However, it is not necessary to have your own testing laboratory. There are excellent custom laboratories available, fully equipped to test every property of a container. Two of the best known are the Don L. Quinn Co., Chicago, and the Container Laboratories, Inc., of New York City. Several public or semi-public institutions also have box testing equipment. Examples are the U. S. Government Forest Products Laboratory at Madison, Wisconsin, and the Institute of Paper Chemistry, Appleton, Wisconsin. The armed forces also maintain several testing laboratories of their own.

In the early days of box testing it was soon found that most results are considerably affected by the moisture content of the fibreboard, which in turn depends on the relative humidity of the atmosphere. Therefore, whenever possible, this work should be done at some constant relative humidity and temperature. Most box testing laboratories operate at 50% R.H. and 73° F.

These constant conditions not only make possible a dependable comparison of day-to-day results but also prevent many misunderstandings. For example, a corrugated box maker might guarantee a top to bottom compression of 900 lbs. on an empty corrugated container at 50% R.H. and 73° F. If this box is later tested by the customer on a humid Summer day (say 80% R.H.) without conditioning, it would test about 600 lbs.,

or only two-thirds of the guarantee.

On another occasion, a customer complained that a shipment of 200 test corrugated boxes were averaging only about 185. An investigation showed that the customer was testing the boxes in a midsummer atmosphere of between 80% and 90% relative humidity. The box maker had shown a test of 235 in his laboratory under controlled conditions of 50% R.H. and 73° F. A few days later when the weather had cleared up, these same boxes were going over 200 on the customer's Mullen tester.

Rule 41 of the Consolidated Classification now states that “Cady or Mullen test must be made after board has been subjected for at least 3 hours to normal atmospheric conditions (50% to 70% relative humidity)”. A minimum of 50% is given because the Mullen test of corrugated board will also be abnormally low if the boxes have dried out, as is often the case when they are stored or exposed in a steam heated room in the winter time.

Speaking of Rule 41, you may have noted that glassware and liquids in large metal cans are the only commodities whose container specifications are covered in the Rule itself. The carriers, boxmakers and shippers all realize that there is no universal specification that will cover fibreboard containers for all commodities. Rule 41 described boxes but does not mention performance tests. Committees representing these interests are now at work in an endeavor to develop specifications and performance tests for specific commodities. An indication of this trend is the fact that the Classification Committee re-

(Please turn to page 348)

Fibreboard containers can be adapted to all sorts of products—heavy equipment, fragile glassware, and a wide variety of staple merchandise.



The Outlook for Raw Materials

Domestic steel consumption is close to a half ton per capita annually

Postwar usage of aluminum has been far in excess of earlier estimates.



By Andrew H. Phelps

Vice President, Purchasing
Westinghouse Electric Corporation
Pittsburgh

Abstract of an address before the
Maryland Utilities Association, Vir-
ginia Beach, Va., Sept. 18, 1948.

Increasing demand is putting a serious strain on our natural resources.

The inevitable course of raw material prices is upward.

Development of electrical power goes hand in hand with industrial progress and expansion.

JUST the other day, the American Iron & Steel Institute reported that the output for August of the steel industry was nearly 7,500,000 tons of steel. This is at an annual rate of approximately 90,000,000 tons per year. This output is still inadequate to handle all the programs which we now have with us and those which will arise in the future.

In trying to analyze the future of the steel industry, we have many factors to consider. We now have a tremendous demand for all steel products. This demand is so high that the steel industry has not been able to handle all the requirements. Steel shortages have restricted the expansion of many businesses and have caused the closing down of a number of enterprises. Some of our

steel shortages are temporary; however, many of them, I feel, will be with us for several years. In addition to our present post-war steel shortages, particularly for manufacture of automobiles, the government has set up several steel allotment programs (atomic energy, housing, freight car, armament, piping for oil and gas lines) which operate on a voluntary allocation basis. These programs have first call on the steel produced and what is left is channelled to manufacturers to try to take care of:

- (a) goods required by an increasing population
- (b) normal replacement of worn-out facilities
- (c) new products and devices resulting from technological improvements and advancements

These programs defeat a free flow of business in the American way.

To handle this growing demand, further expansion in our steel facilities is necessary.

Steel Demand Is Increasing

We hear much talk these days about the exhaustion of the rich iron ore mines in America. When this will come about, no one has ventured a definite prediction. Some say ten years, and others guess at 20 to 30 years. To conserve the remaining rich ore, the steel industry has been busy during the past several years developing a "beneficiation process" to reclaim the lower-grade ores which up to now have been by-passed. These low-grade ores are plentiful, I am told, and should last many years.

In 1929, we had a per capita usage of steel totalling 978 pounds. This figure dropped to 838 pounds in 1940 but was rapidly increasing when the war diverted nearly all the steel production into the war effort. As more steel becomes available, I feel that the per capita usage of steel should grow to 1500 pounds. This would mean that with an estimated population increase up to 163,000,000 people by 1975, we would require an ingot output of over 100,000,000 gross tons to handle our domestic needs alone.

We as consumers are interested in buying more and more products made of steel. Combining this increasing individual demand with a constantly increasing population, there is every indication that our need for steel 20 years hence will be in the neighborhood of 100,000,000 tons as against our present production capacity of 80,000,000 to 90,000,000 tons. In recent months, we have started our first major importation of steel scrap and there is every indication of a continuing need for this additional tonnage of raw material for making steel.

The mills are now paying more than double the price for scrap than they paid at the termination of O.P.A., and there is every indication that as long as the demand for steel continues its upward cycle, the price of scrap will be maintained at this high level.

Copper in Short Supply

Of all the non-ferrous metals, copper is the most essential and critical metal in time of peace, as well as in time of war.

The electrical industry has taken well over 50% of the total copper consumed by domestic industries during the past 20 years. The next largest user has been the automotive industry, which has taken about 12% of the total. Miscellaneous industries used about 18% and building around 9%. Copper is used in the electrical industry as a conductor of electric power and is difficult to replace, except in certain power cables and transmission circuits.

The copper supply problem today and in the future depends largely on the demand for this metal in the United States and throughout the world. During the war years, the demands on copper suppliers were so great that it was necessary to draw on every resource in order to produce the maximum from existing facilities. New resources had to be developed. Premiums were paid to increase production, and high cost

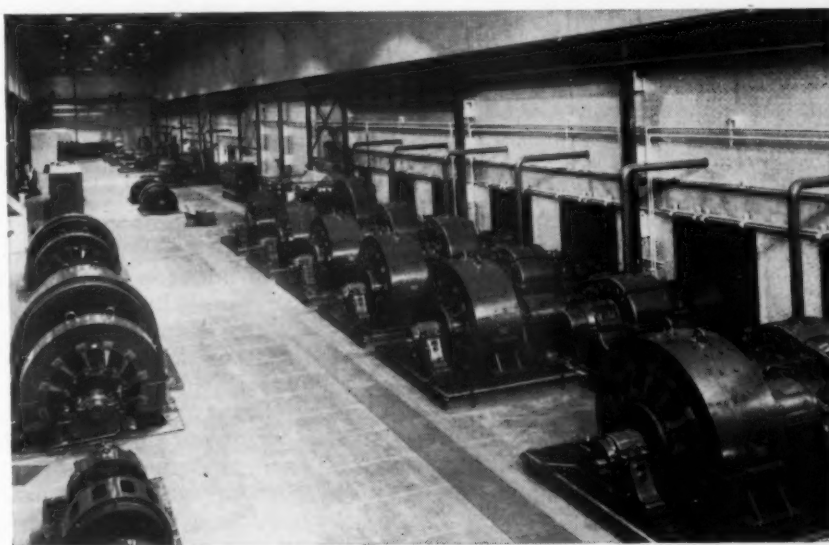
mines were encouraged to operate under Government subsidy. In spite of this, it was necessary to ration copper so as to meet military demands and the most essential civilian needs.

This red metal is the Number 2 "Must" (steel being Number 1) in America's peace or war economy. Before World War I, the United States was producing and refining an ample supply to take care of all normal industrial and military demands and was exporting a substantial tonnage. During World War I, the price reached a maximum of 37¢ per pound, although there was no shortage of the metal as experienced in World War II. America was still a land of plenty with an abundance of the red metal above and under ground. After World War I, con-

Stock-piling may amount to an additional 300,000 to 400,000 tons annually.

In the April 19, 1948, issue of "Barron's," Mr. C. Donald Dallas, Chairman of the Board of Revere Copper and Brass, Inc., writes: "The manifestly non-political Twentieth Century Fund in its comprehensive study issued last year under the title, 'America's Needs and Resources,' made the statement that at the peak war rate of mining in the United States, the commercial grade of copper would have lasted not more than 12 years. At prewar levels, known copper supplies would have lasted about 30 years."

The Federal Trade Commission Report on Copper Industry states, "The copper ore reserves of the



Westinghouse motors drive the finishing train of a hot strip mill. The electrical industry uses more than 50% of total copper, and its requirements are rapidly increasing.

sumption eased off. The supply above ground was far in excess of the demand, and for five years, 1922-1926, the average price was 13.88¢ per pound. In 1932, we experienced an all-time low in production, usage, and market price (about 4.55¢ per pound). Since 1932, domestic industry and military requirements have been consuming copper at a rate which, if continued, will in the near future put the United States in the position of a "have not" nation in the red metal.

Mr. Charles Sawyer, Secretary of Commerce, on August 5, 1948, stated that "the total demand for copper in 1949, excluding stock-piling, would be 1,380,000 tons and the net available supply would be 1,280,000 tons, making a deficit of 100,000 tons."

world have been estimated, as of January 1, 1945, at about 111 million short tons in copper content. About 57 million tons of this copper lies in South America and Africa, and 29 million in the United States, totalling together about 76% of the world's supply."

Seemingly, there is no limit to specifications for electric current consuming devices. In the home, in industry—electronics, aviation, marine, radar, television, radio—are potential users of electric power which were undreamed of 25 years ago. As a businessman and with these facts before me, I cannot see any lessening in demand for the red metal. The electrical industries, and the public utilities in particular, in the next 25 years may find themselves in a most



Selective cutting and reforestation help conserve our lumber supply.

critical position for this material. What is the solution? American industry must look into this situation and, in cooperation with Government officials, find ways and means to conserve one of our nation's most essential metals. Import duty should be removed indefinitely to permit the import of more copper. Substitutions must be used whenever possible. The ERP (Marshall Plan) should be used to import copper and to this extent at least conserve our domestic underground metal.

I do not wish to pose as a crystal-gazer or a prophet, but it is my tempered judgment that the electrical industry can anticipate higher costs and critical material shortages.

Non-Ferrous Metals

Other non-ferrous metals in general follow the copper pattern. We are a "have-not" nation on tin, which is still on Government allotment. The supply is tight, and the market price has reached an all-time high—\$1.03 per pound from the low of about 22¢ per pound in 1932. Here again is where the ERP should be used to help our stock pile and national economy. The production of tin throughout the world, thus far this year, has shown encouraging increases over the same period in 1947. However, civilian uprisings and increased labor rates in the producing areas, especially in Malaya, together with transportation rates and facilities, will continue to keep this metal in short supply a long time. Consideration of all factors surrounding the procurement of this metal indicates maintenance of current price levels for the distant future.

Current demands for all grades of

zinc is in excess of supply. The 1932 low for this metal was about 3¢ per pound. The average price for 5 years, 1922-1926, was 6.75¢ per pound. Currently, it is selling for about 15¢ per pound, f.o.b. St. Louis. It seems that increasing the price has not resulted in greater output at the mine smelter.

Labor difficulties in the lead industry, causing production stoppage, have kept this item in short supply. The current market price is 19.50¢ per pound, which is an all-time high for the industry. Here, too, increasing the selling price has not resulted in greater mine output.

The post-war usage of aluminum has been away in excess of the most optimistic estimates made during the war years and immediately after V-J Day. Expansion of facilities has been under way for the past several years, but the supply of the finished material does not seem to be catching up to the demand. The many and varied specifications for aluminum products have overloaded increased facilities before installation work was completed. An enormous amount of electric power is required to reduce bauxite to the finished product, and I am told that insufficient electric power has been a big element in retarding production. It is interesting to note that this is one metal on which prices for the past 20 years have been on a down-grade.

Conservation of Lumber

Lumber for housing, lumber for furniture, lumber for industry! The demand for lumber has driven the price level higher than any other basic commodity, and we are paying over three times the 1926 price.

What does the future hold forth in this field of lumber products? When the Pilgrims landed on these shores, we had over 900,000,000 acres of virgin timber. May I draw a personal illustration at this point. When a small boy in the 90's, I moved with my family from the plains of Nebraska beyond the Rocky Mountains to a ranch near Spokane, Wash. This was practically virgin territory at that time. The Union Pacific was only a little over ten years of age. Other railroads were being put in; most of them had just been completed. This ranch had an abundance of very large timber trees. To cultivate, it was necessary to dispose of much of the timber. So, it was cut. It wasn't worth enough money to have it processed at a mill. The need for firewood was not great enough to consume it. Therefore, great piles of it had to be burned. This is an illustration of what happened all over this country with the virgin timber which now would be so valuable if we had some of it remaining.

There are several splendid reforestation programs which seem to point the way to the rebuilding of our timber supply in this country. These should go ahead just as rapidly as possible if we are not to have a shortage here which will be very hard to overcome.

Greater Use of Raw Materials

Today, we have potential production lands of less than half of this 900,000,000 acres. Though much progress has been made in learning how to conserve our forests, we are still faced with the fact that depletions are going on 1½ times faster than replacements can be grown. The paper mills and the mills cutting for lumber only are making great strides in their efforts to make greater use of all their raw material. By-products are being developed which will eliminate the wastage normally considered necessary among the lumber firms. Many companies, including Westinghouse, have imported a substantial portion of their lumber requirements to assist this country in reducing the drain on its reserves. This has prevented the domestic price from going even higher.

The several sources of demand for lumber products provide an indication that we may not expect any substantial reduction in cost for some time to come.

The plastics industry and its parent, the chemical industry, have been indirectly benefited by the high cost of lumber, for it is under this protective selling that we have seen many

of our durable goods switch from a wood exterior to that of a molded plastic exterior. In many cases, the results have been superior both from a manufacturing and a sales viewpoint. Chemical plants are springing up all over the country. This industry has made phenomenal strides in a comparatively few years, and as the plants' volume and diversification became greater, they were able for many years to satisfy their greater increased cost through greater volume of output. With few exceptions, the chemical industry does not have a problem in obtaining raw material. It has been a major user of electric power, and its need for power will become increasingly greater as the years go on. It also has the advantage of a comparatively low labor cost, and though it has found it necessary to increase prices in the last two years, these increases were due to the increased cost of production facilities and transportation costs.

Expanding Chemical Industry

This industry is still expanding rapidly, but we can see no prospect of lower cost in this industry in the immediate future. It would be my observation that the present level may be maintained without too great a variation.

The petroleum industry and the chemical industry are becoming closer and closer in their relationships as we go into the post-war era. Working arrangements between major chemical companies and oil companies have been noted. Separate corporations sponsored by chemical companies and oil companies have been developed for the purpose of producing chemicals from petroleum by-products. This marriage is resulting in large capital investment for installation of synthetic plants. The by-products will compete, and most favorably, in quality and price, with the basic chemicals. You are all familiar with the fact that substantial quantities of alcohol are now being manufactured from petroleum by-products. We have been advised that this alcohol can profitably be sold in the 40¢ per gallon range as compared with the molasses fermentation type alcohol now quoted at around 70¢ per gallon. As production increases on this new type of product, there will be an interesting transition in this division of the chemical field. There are other developments similar to this which portend a substantial investment in the petroleum chemical field in the immediate future.

Speaking more specifically of petroleum itself, we must take cognizance of the fact that we have been draining crude oil from the ground at an ever increasing rate. Though new production up to now kept pace with this withdrawal, we are faced with the problem that this cannot go on forever. There is no chance of replacing our oil reserves, as there is our forests. When they are gone, we are done. Two solutions to this problem are being developed by our major oil companies: Solution one is to bring in from abroad greater and greater supplies of foreign crude. Our developments in this field have been of such international importance that no comment is necessary, though it might be well to point out that we are bringing material not only from the near East but also in substantial quantities from our South American neighbors. The chances of having these latter sources cut off are much less than those in the East. Solution two—in addition to these importations there is being developed in the Pittsburgh area a process for making coal into fuel, oil, and gasoline. This is a cooperative project undertaken by the Pittsburgh Consolidated Coal Company and Standard Oil of New Jersey. Pilot plant operations are now in progress; should these experiments prove successful, our problem of liquid fuel will be satisfied for many years to come.

The petroleum industry is somewhat comparable to the chemical industry with regard to their pricing policies, as it was only in the last 20 months that they found it necessary to increase their prices. Their rate of increase since the end of O.P.A. has

been much more rapid, showing a general increase of about 66% in less than two years. We feel that this increase has been excessive, and there may be in the not too distant future some retraction to a lower level. Any rearrangement of pricing, however, will not be such that it will revert to the former levels, we feel sure.

Coal—a Basic Cost Factor

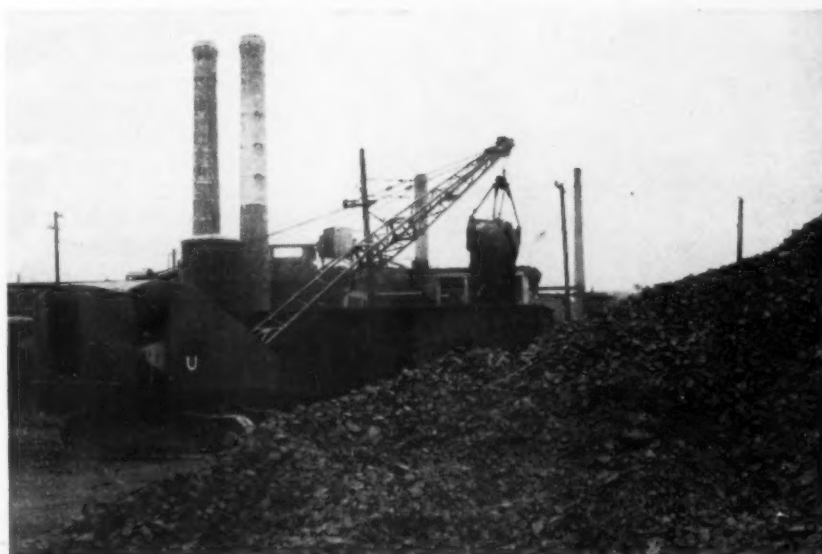
The bituminous coal industry, since settling its labor difficulties, has been operating at peak production. It is estimated that the total tonnage mined will run between 600,000,000 and 700,000,000 tons during 1948. During 1947, 621,000,000 tons were mined. Our stocks are the best they have been within the last 18 months. It is reported that approximately 60,000,000 net tons of coal are now in storage. This amounts to about a 45-day supply.

Our exports of coal during 1948 are quite a bit lower than they were during 1947. Our peak export month was August, 1947, when a total of 5,000,000 tons of coal were shipped overseas. Our exports are now running approximately 2,000,000 net tons per month.

Hourly earnings of miners in 1932 were approximately 50¢ an hour, and they have now climbed to approximately 1.80 per hour. This represents a sizeable increase in our coal bill. The pension plan, along with other concessions granted to the coal mining unions, has added to the cost of power generation as well as to the operating cost of every manufacturer in the country. This is a cost which

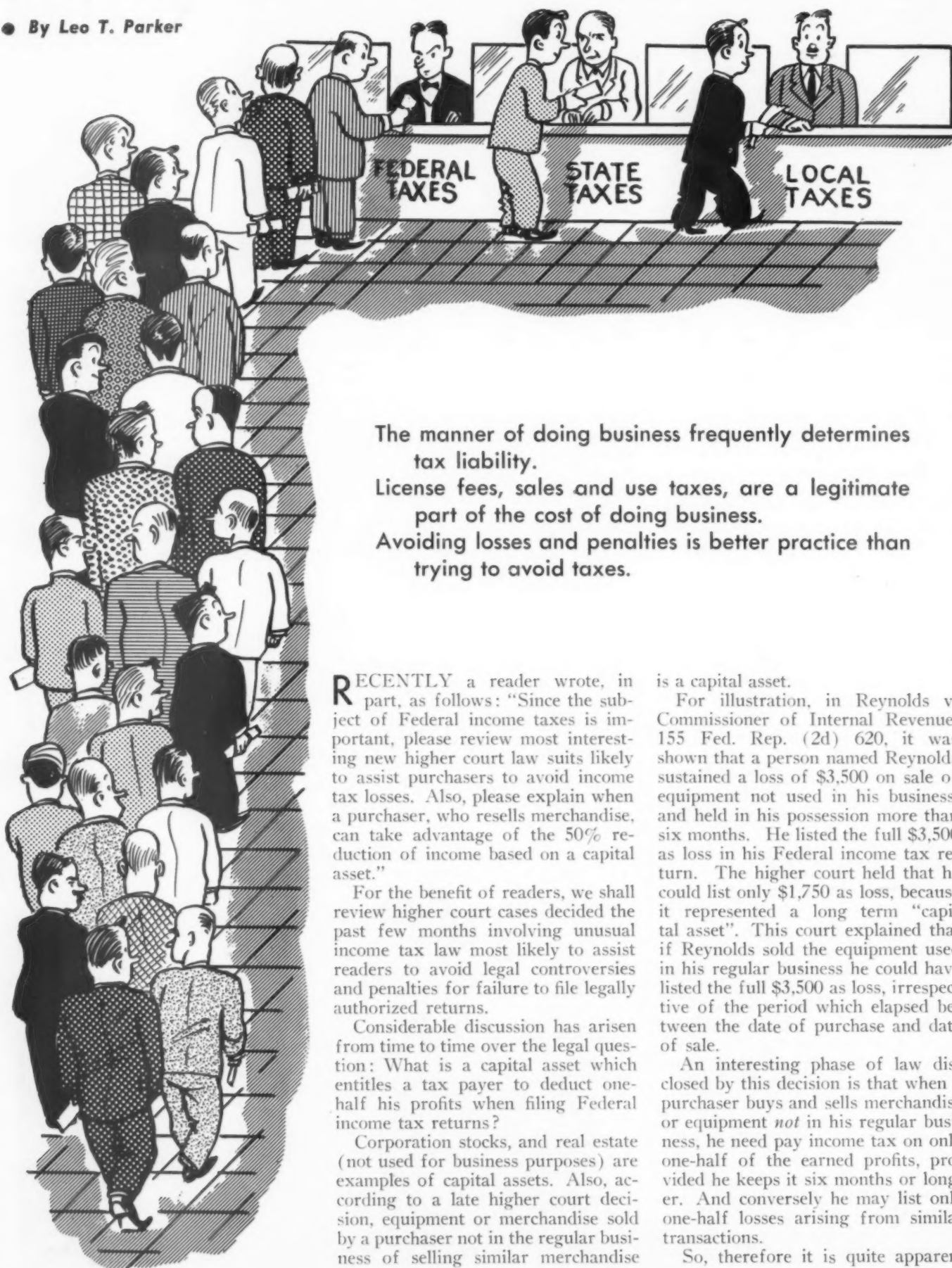
(Please turn to page 336)

Coal production is high, and so are industry's fuel costs.



Taxation Law For Purchasers

● By Leo T. Parker



The manner of doing business frequently determines tax liability.

License fees, sales and use taxes, are a legitimate part of the cost of doing business.

Avoiding losses and penalties is better practice than trying to avoid taxes.

RECENTLY a reader wrote, in part, as follows: "Since the subject of Federal income taxes is important, please review most interesting new higher court law suits likely to assist purchasers to avoid income tax losses. Also, please explain when a purchaser, who resells merchandise, can take advantage of the 50% reduction of income based on a capital asset."

For the benefit of readers, we shall review higher court cases decided the past few months involving unusual income tax law most likely to assist readers to avoid legal controversies and penalties for failure to file legally authorized returns.

Considerable discussion has arisen from time to time over the legal question: What is a capital asset which entitles a tax payer to deduct one-half his profits when filing Federal income tax returns?

Corporation stocks, and real estate (not used for business purposes) are examples of capital assets. Also, according to a late higher court decision, equipment or merchandise sold by a purchaser not in the regular business of selling similar merchandise

is a capital asset.

For illustration, in *Reynolds v. Commissioner of Internal Revenue*, 155 Fed. Rep. (2d) 620, it was shown that a person named Reynolds sustained a loss of \$3,500 on sale of equipment not used in his business, and held in his possession more than six months. He listed the full \$3,500 as loss in his Federal income tax return. The higher court held that he could list only \$1,750 as loss, because it represented a long term "capital asset". This court explained that if Reynolds sold the equipment used in his regular business he could have listed the full \$3,500 as loss, irrespective of the period which elapsed between the date of purchase and date of sale.

An interesting phase of law disclosed by this decision is that when a purchaser buys and sells merchandise or equipment *not* in his regular business, he need pay income tax on only one-half of the earned profits, provided he keeps it six months or longer. And conversely he may list only one-half losses arising from similar transactions.

So, therefore it is quite apparent

that under no circumstances may a purchaser deduct 50% profits, when filing Federal income tax returns, unless the testimony shows that he held the merchandise more than six months, and also it was not bought and sold in his regular business.

Avoid Penalties

It is true, of course, that avoiding penalties is more beneficial than attempting to save taxes.

According to a recent higher court, the original owner of a business must pay full Federal income taxes on profits earned on sales although a partnership or corporation is formed with members who do not contribute financially or to management of the business.

For example, in *Dawson v. Commissioner of Internal Revenue*, 163 Fed. (2d) 664, reported January, 1948, the testimony showed facts, as follows: A man named Dawson has been a car dealer in Detroit since 1925. In 1934 he entered the automobile business for himself under the name of "Russ Dawson" and conducted the business as sole proprietor until March 1, 1939, when a partnership was formed under the same name. At that time the business was worth approximately \$50,000,000. The members of the partnership were Dawson himself, his wife, Virginia, as separate trustee for each of their three minor children, Russell, age 6, Frances, age 5, and Virginia Lee, age 2. A 2% interest each was allocated to Noble S. Balch and Howard Lare, used car managers respectively.

An important point is that to effect the change, a number of legal instruments, all dated March 1, 1939, were executed. The purpose of these instruments was to legalize the above mentioned interests in the new partnership.

In subsequent suit the higher court held that Dawson must pay income tax plus penalties based on the *total profits*, irrespective of the new interests in the partnership business. This is so because the court decided that Virginia Dawson, individually, and the three children's trusts, were not *bona fide* partners in the business of "Russ Dawson" during any of the years 1939, 1940 and 1941, because they invested no capital, did not participate in the management or control of the business, and contributed no services. This court said:

"We think that the partnership arrangement between Dawson and his wife, individually and as trustee, was 'merely superficial and did not change

the husband's economic interest in the business.'"

For comparison, see *Nordling v. Commissioner of Internal Revenue*, 166 Fed. (2d) 703, reported April, 1948, where it was shown that two brothers Phil and Gill formed a partnership to operate automobile parts stores. In addition, they acquired substantially all the stock of the Nordling Finance Company, a corporation which owned and rented to the partnership the equipment used in the business. Phil became dissatisfied and for \$18,500 sold his partnership and corporate interests to Gill. This sales contract included the name of Gill's wife, as a purchaser. The suggestion that Gill's wife should be taken in as a partner originated from a conference with a tax consultant.

In subsequent litigation the higher court held that the wife's participa-

tion in the purchase was purely nominal and that no partnership existed which could be recognized for federal income tax purposes. In other words, the whole income of the partnership was taxed to Gill.

And also see *Heady v. Commissioner of Internal Revenue*, 162 Fed. (2d) 699, reported March, 1948. It was shown that one Harvey was principal stockholder in a corporation. Harvey died and his wife and executor could not sell his stock at a satisfactory price. Therefore, 1,000 new shares of par value of one dollar a share and \$135,000 in 7% debentures were issued in exchange of the old no-par value shares. Later the wife and executor sold the new shares on the installment basis.

The higher court held that the estate realized taxable income from distribution of the debentures, not-

SOME THINGS YOU SHOULD KNOW ABOUT BUSINESS TAXES

What type of purchases can be classified as capital assets for tax purposes?

What is the tax responsibility of an original owner if the business is subsequently transferred to a partnership or corporation?

Does recapitalization relieve a corporation or stockholder of taxes on the original investment?

Can state income taxes be levied on subsidiary operations located in another state?

Are pension payments deductible as a business expense?

Does credit assistance extended to a partnership constitute participation to the extent of tax liability?

Under what circumstances can an overpayment of taxes be recovered?

Are bank deposits a legal measure of the gross receipts of a business?

How valid are state sale and use taxes in respect to interstate commerce?

What are the limitations on the authority of a municipality to assess business taxes?

Can special taxes be imposed on non-resident business firms without becoming discriminatory?

What is the distinction between a business tax and a license fee?

withstanding that the distribution took the form of a recapitalization.

On the other hand, corporation officials can refuse to pay state income tax on dividends received on stock held by a corporation in another state, if the two corporations are in different business classifications.

For example, in *Marshall Hardware Company v. Commissioner of Taxation*, 20 N. W. (2d) 92, reported November, 1947, it was shown that a state law requires every corporation which "does business" within the state of Minnesota to pay a tax measured by the net income of the corporation.

The higher court held that a corporation need not pay taxes to the state of Minnesota on income derived from dividends received on stock in another corporation located in another state, and *not* in the same business.

For comparison, see *Cargill, Inc. v. Spaeth*, 10 N. E. (2d) 728, where the higher court held that a parent corporation must pay taxes on dividends received from subsidiary corporations in other states, and which dealt in the same classification of merchandise bought and sold by the parent corporation.

Salary Donated

According to a recent higher court, a corporation or partnership may deduct as valid and allowable expenses salary donated to a former purchasing agent or his widow for a limited period in recognition of past services. However, such salaries cannot be paid for an unreasonable period.

For example, in *Coast Company v. Commissioner of Internal Revenue*, 149 Fed. (2d) 739, it was shown that a corporation's Federal tax return contained a deduction of the salary paid to several widows of deceased employees and officers of the corporation. The higher court held the deduction illegal, and assessed a heavy penalty.

However, this court stated that payment could be made legally to a former employee's widow for a "reasonable" time, even though the corporation is not legally obligated to compensate the widow.

Who Must Pay Taxes?

It is well established law that one who had control of a partnership or other non-incorporated business and operated the business according to his own ideas and dictations is liable for payment of taxes.

For illustration, in *State v. Dean*, 188 Pac. (2d) 355, reported April,

1948, the testimony showed facts, as follows: One Dean was the owner of the Dean Drug Company and in 1936 he permitted the use of his credit rating to assist his two sons-in-law in organizing and opening another drug store known as the Corner Drug Store. An auditor made an audit of the books of the Corner Drug Store, and prepared reports which Dean signed because of the absence of the sons-in-law.

The only evidence tending to place Dean in the position of owner of both drug stores was the two reports prepared by the auditor and signed by Dean at the auditor's request and insistence without reading them.

The evidence introduced in Dean's favor was that he had no interest whatsoever in the Corner Drug Store other than he used his credit and past experience in financing his two sons-in-law.

The higher court refused to hold Dean liable as owner of the "Corner Drug Store" because no testimony was given which proved that Dean "controlled" or instructed his sons-in-law how to operate the business.

Still another important point of law is that you cannot win a Federal tax suit based on a state law.

For illustration, in *United States v. Caldwell*, 74 Fed. Supp. 114, it was shown that tobacco had been placed in a warehouse, and negotiable receipts were issued. The government levied on the tobacco for income taxes.

The Federal Court approved the levy although a state law prohibits levy upon goods for which a negotiable warehouse receipt has been issued, unless the receipt be first surrendered to the warehouseman.

This court held that a state cannot pass a statute which will defeat the United States in collection of income taxes.

Overpayment

There has been much confusion regarding the time limit for filing claims against the Government for overpayment of income taxes.

In *Collector of Internal Revenue v. Liberty Company*, 68 S.Ct. 229, the testimony showed facts, as follows: The Liberty Company filed its income and excess-profits tax return for 1938. The amount due was paid in 1939. A revenue agent later investigated the company's liability again, resulting in an additional assessment of \$6,640.81. Payment of this amount was made on March 8, 1941. Over three years later the company filed a claim for a refund

because the revenue agent erroneously had failed to allow certain credits for sums used by the taxpayer in 1938 to reduce its indebtedness.

The Supreme Court of the United States held positively and irrespective of whether the over payment was the fault of a revenue agent or mistake of the taxpayer, a claim for any overpayment cannot be filed more than three years after filing of the income tax return, and more than two years after payment of the tax.

This court also held that the term "overpayment" means *any* payment in excess of that which is properly due. Hence an excess payment may be an error in mathematics or in judgment of the taxpayer or in interpretation of facts or law. And the law is the same whether the error is committed by the taxpayer or by the revenue agents.

Gross Receipts

Very frequently tax authorities refer to "gross" receipts for determining the amount of taxes due and payable.

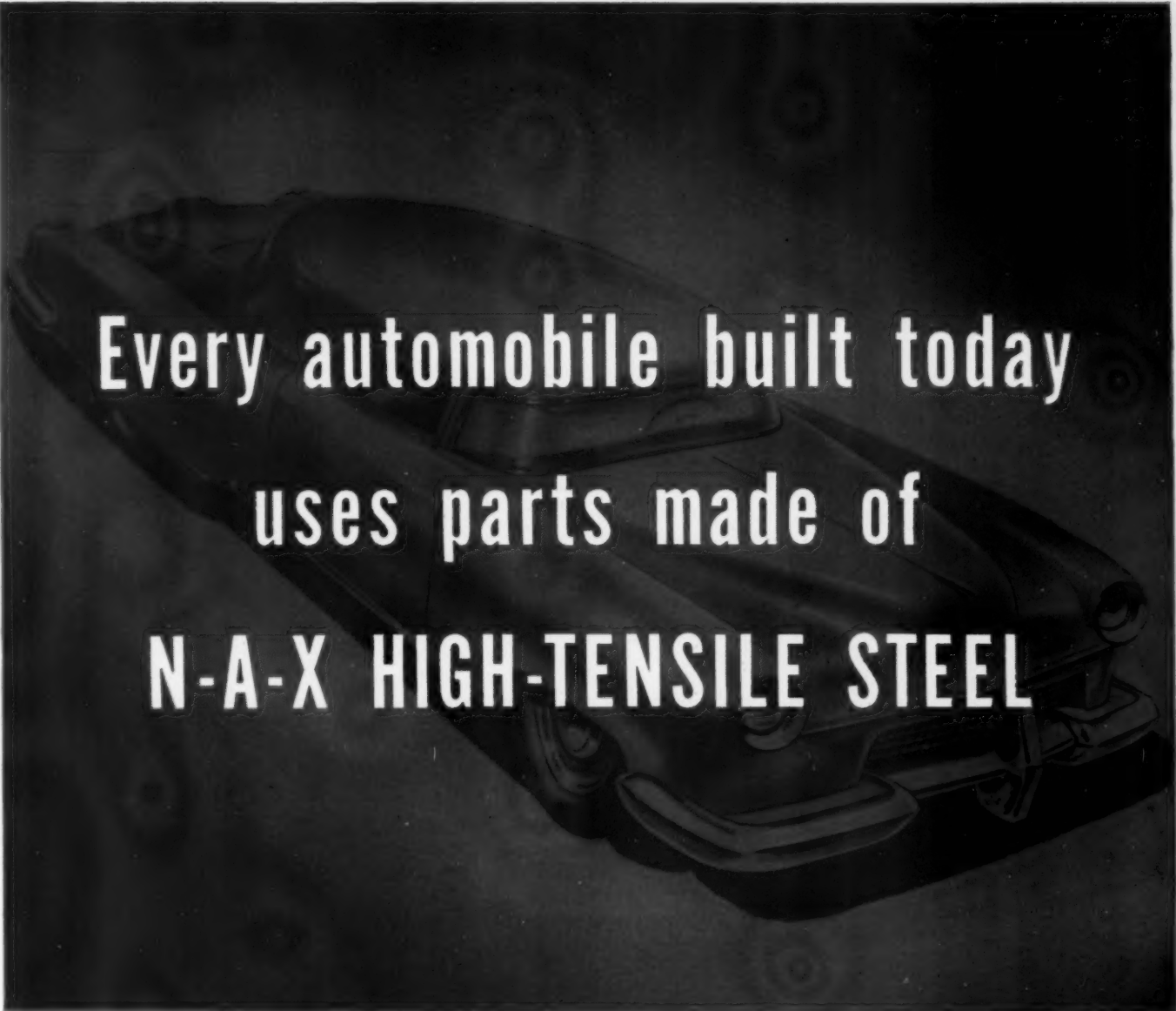
In *People v. Schwartz*, 187 Pac. (2d) 12, a suit was filed against the Central Company to recover alleged delinquent tax. The tax officials proved that there was a discrepancy between the company's bank deposits and gross receipts recorded in its sales journal.

The higher court held that the company must pay tax based on the gross receipts indicated by the bank deposits. This court said:

"It shall be presumed that all gross receipts are subject to tax until the contrary is established."

Sale and Use Tax

Certain states have adopted both "sale" and "use" taxes. The laws are valid. Therefore, it is not advisable that purchasers expend money to contest laws of this nature. Here is the law. A state law on sales of merchandise is void on merchandise shipped from outside the state, because interstate commerce laws prohibit one state taxing another state's business transactions. However, various states avoid interstate commerce laws and regulations by permitting purchasers to receive, free of taxation, all merchandise shipped from outside the state, and then demanding payment of "use" taxes. Thus, interstate commerce laws are not violated, but still all purchasers in the end must pay taxes to the state for a license or privilege to use the subject of the sales. Usually the "use" tax amounts to the same as



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originally specified in "sales" tax laws, before state officials became aware that these latter laws are prohibited and in violation of the "rights" guaranteed citizens by the United States Constitution, where the goods are shipped from a seller outside the state in which the purchaser is located.

Municipal Taxation

It is established law that a municipality has no *natural* rights to assess a tax or to enact restrictive laws regulating purchasers. This is true because a municipal corporation exercises *only* such power that is delegated to it by the state Legislature, and the state Constitution.

Obviously, therefore, a city ordinance is void which contradicts or conflicts with a state law. See *Chicago v. Clark*, 220 Ill. App. 319, where it was disclosed that a municipality passed an ordinance requiring the payment of taxes which were regulated by a state law. The court promptly held the ordinance invalid, and said:

"We think the state law covers all of the matter mentioned in the ordinance, and that it is clear that the requirements of the ordinance are unnecessary. Since the ordinance conflicts with the state law, it, of course, is void and must give way."

Unreasonable Laws

Generally speaking, a city ordinance is invalid and unenforceable which imposes an "unreasonable" tax, although power is delegated to the municipality by state laws to enact taxation laws. In other words, a municipality always is limited by the Constitution to impose laws that are reasonable, nondiscriminatory and not prohibitive. Moreover, a taxation ordinance is invalid where it is shown that the sole purpose of the law is to eliminate "outside" competition. This is so because laws of this nature are discriminatory.

For instance, in *Hines*, 164 Pac. 339, a city ordinance was adjudicated which provided that corporations located within the city shall pay a license fee only 10% as great as the fee paid by corporations situated outside of the limits of the city. The higher court held this ordinance void, saying:

"We are of the opinion that the provisions of the ordinance attempt to create and enforce a discrimination not based upon differences in the nature of the business being transacted or differences in the manner of conducting the same business."

Also, in *Campbell Company v. City of Maryville*, 31 F. (2d) 466, a city ordinance of the same kind was held void. This court stated the following important law:

"A city, having the power to impose license taxes undoubtedly may classify them, *if the classification has some reasonable basis*. . . Where it appears that the real intent and purpose is not to raise revenue, but to destroy the business of nonresidents, then nonresidents are denied that equal protection of the laws which the Constitution guarantees to all."

Business Taxation

According to a recent higher court all taxation laws which tax different purchasers and sellers in same business are valid and enforceable if such laws are reasonable and non-discriminatory. See *Smith v. Perkins*, 73 So. 797. This court said:

"It is difficult to imagine that the Legislature intended to thus favor a selected class of merchants. To make this statute a valid exercise of the legislative power a different construction must be found, if it can be reasonably done."

Another important point of law is that all higher courts have upheld the law that in the exercise of its natural power, the Legislature of a state may suppress, prohibit and regulate any business for the purpose of promoting the safety, morals and welfare of the people. Nevertheless, a statute passed pursuant to the "police power" should be reasonable. The real purpose of such a law must be to protect the public health, morals, or general welfare, otherwise it is void.

For example, in *General Company v. City of Belleville*, 51 N. E. (2d) 546, the higher court held a city ordinance valid which required purchasers and other business firms located outside the city to pay an annual tax of \$50.00 to operate motor vehicles on the streets. This ordinance exempted local firms from paying the tax. Hence the ordinance related only to out-of-town persons and firms who may send motor trucks into the city to take delivery of merchandise from depots and all other places.

It was contended that the ordinance was void because it discriminates between local firms and others located outside the city. However, the higher court held the ordinance valid saying that a city can collect extra taxes from non-residents for use of streets.

On the other hand, such a law is void if its purpose is to give an advantage to local business firms without good and logical reasons.

For example, in *Abilene*, 169 S. W. (2d) 497, a city ordinance was contested which required non-residents to pay taxes, or license fees, but the ordinance did *not* require residents to pay similar taxes. The higher court promptly held the ordinance invalid.

Avoid Financial Losses

Considerable discussion has arisen from time to time over the legal question: When may a purchaser refuse to pay taxes or a license fee?

First, it is important to know that illegal *license fees* paid voluntarily can be recovered, but illegal *taxes* paid voluntarily cannot be recovered from either a state or city.

For instance, in the leading case of *City of Charlottesville v. Marks' Shows, Inc.*, 18 S. E. (2d) 890, it was shown that a corporation *after a protest* paid a city a license tax of \$454.50. Later it sued the city to recover this amount, and proved that the tax law is invalid.

The higher court decided that the city had collected *taxes* and not *license fees*. Therefore, it refused to order the city to refund the money and said:

"The right to recover taxes which have been illegally levied and collected has its limitations. In an unbroken line of decisions this court has held that in the absence of statute, taxes illegally assessed and paid voluntarily and not under compulsion cannot be recovered in an action of law."

Thus, although a state tax law or city ordinance is invalid, a purchaser cannot recover taxes voluntarily paid. The reason for this law is that every man is supposed to know the law, and if he voluntarily pays a tax, which the law would not compel him to pay, he cannot afterwards assign his ignorance of the law as a reason why the state or city should refund the money.

On the other hand, all courts are in accord with the proposition that purchasing companies may sue and recover from a state or city *license fees* illegally collected. In order that readers may be able to distinguish purely license fees from taxes it is well to explain that where the fee is imposed for the purpose of *regulation*, such sum is a license. But if the money is exacted solely for revenue purposes, and without anticipated police protection, it is a tax.

Thus, if a purchaser pays illegal *license fees* he may sue and recover the money paid. But if the money paid is classified as illegal taxes, he cannot sue and recover this money.

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A brochure is available containing specifications and general information on many of the Celanese organic chemicals. Write for your copy—and call Celanese whenever you need technical assistance regarding organics.

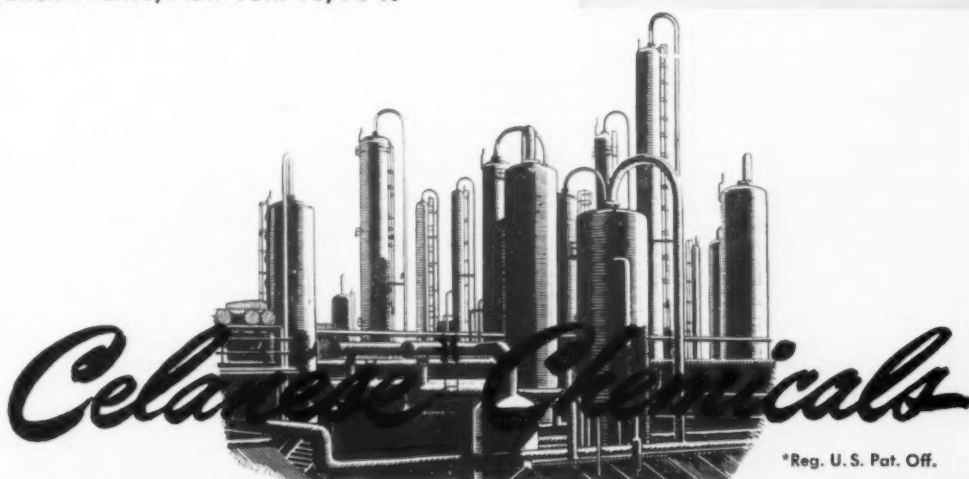
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NOVEMBER, 1948

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New PRODUCTS • IDEAS

Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



ALL-ELECTRIC HEATER



ELECTROMODE all-electric heaters, including portable and deluxe as well as heavy-duty units, have a new silver-gray finish that is said to blend with practically any color scheme. Smooth finish makes for easy

cleaning. All models circulate heated air with a fan. Heat is generated by a cast-aluminum heating element which contains no exposed wires or glowing coils. *Electromode Corporation, 45 Crouch Street, Rochester 3, N. Y.*

RESPIRATOR PROTECTS AGAINST DUSTS

R-2900 respirator is used for protection against light concentrations of nuisance dusts such as found in woodworking

plants, cement mills, some grinding operations, coal yards; and other exposures not involving pneumoconiosis, silicosis or asbestosis-producing dusts. Streamlined design allows unobstructed front and side vision. Filter is lightweight, inexpensive and easily replaced. *American Optical Co., Southbridge, Mass.*

AUTOMATIC PARTS WASHER



"AIR-MATIC" automatic parts washer is compact and portable and is said to offer complete fire protection in the use of flammable cleansing solvents. Washing of parts is achieved by moving

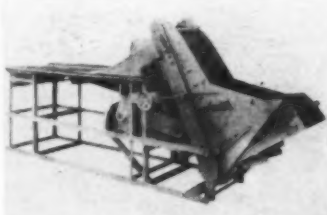
perforated basket up and down through solvent, producing least possible turbulence and eliminating dangerous vapors. Reciprocating air engine is used for economy and efficiency. The machine will operate on any compressed air supply. *The Protectoseal Company, 1920 S. Western Ave., Chicago 8, Ill.*

120" TILTING FORK MODEL TELESCOPE WORKSAVER

clearance of 83". It has a capacity of 3000 lbs. and is designed to make possible maximum use of available headroom in high-stacking operations. The truck travels at 2 mph under full load, lifts 8 ft. per minute with 2500 lb. load, and tilts a full 18 degrees in 10 seconds. Dimensions are 33" wide by 64" long. *Materials Handling Division, The Yale & Towne Mfg. Co., 4562 Tacony St., Philadelphia 24, Pa.*

"WALKIE" tilting fork model materials handling Work-saver truck has a 120" reach, combined with a lowered

INSPECTION TABLE



ELEVATOR hopper feeds any small, mass production items on to a 2' x 8' conveyor belt for visual inspection on this table. A multi-speed transmission and a variable angle control allow any desired distribution on the table. It is possible to inspect as many as 130,000 small parts per hour on the table, maker states. It requires only 48 sq. ft. of floor space, and all moving parts are readily accessible. *D. H. Prutton Machinery & Tool Co., 5295 West 130 St., Cleveland, O.*

QUICK WATERLESS HAND CLEANER

EMBURACE Hand-Clean is a white, creamy lotion, non-toxic to the skin, which is said to quickly erase grime and grease from workers' hands. To use, a drop of the lotion is applied to the hands and rubbed in. The dirt on the hands is formed into tiny particles, which may be rubbed or shaken off. *Embur, Inc., 41 West 54 Street, New York 19, N. Y.*

ADJUSTABLE SHORING DEVICE



STEEL adjustable shoring device for use in supporting temporary form-work to concrete floor arches, beams walls, columns, etc., is also adaptable to scaffolding and sway bracing. The shore is made in 4 heights ranging from 5'7" to 11' and is adjustable up to 15' when fully extended. Operation of the shore is effected by one person. No jacks and bars are required. The shore has no loose parts and is compact, easy to store and transport. *Acrow, Inc., 155 Washington St., Newark, N. J.*

ABSORBENT DRYING MATERIAL FOR FLOORS

NEW drying agent for floors is a relatively hard, granular material, with high absorptive qualities for oil, grease, and

water drippings. It does not become slippery or soggy when saturated. It is bright in color and increases the degree of light reflectivity when spread on the floor. Available in 50 lb. bags. *Industrial Floor-Dry Dept., The Eagle-Picher Co., American Building, Cincinnati 1, O.*

PORTABLE ELEVATOR



TYPE "C" portable elevator is a light duty, either electric or hand-operated production unit, which is available in all capacities, and with various size platforms and heights. It is equipped with lifetime bronze bushings, replacing ordinary rollers; and lightweight mechanical tubing in place of cumbersome angle iron. Three-speed handle is adjustable for light, medium and heavy loads. *Montgomery & Co., 53 Park Place, New York 7, N. Y.*
(Please turn to page 150)



Rare gas "krypton" in new 85-watt G-E fluorescent lamp gives more light for your money

General Electric Lamp scientists have developed a new fluorescent lamp which uses only 85 watts, yet gives the same amount of light and the same long life as the 100-watt fluorescent lamp it replaces!

Increased efficiency of the new G-E 85-watt fluorescent lamp results from the development of a successful method of employing krypton, a rare gas occurring in air to the extent of about one

part in a million. The new lamp has the same overall dimensions as the former 100-watt fluorescent lamp, and is designed for use with existing 100-watt accessory equipment.

When you're planning new fluorescent lighting, or are replacing blackened 100-watt tubes, be sure to ask your G-E lamp supplier about the new G-E 85-watt fluorescent lamp. And remember,

now for the first time, he can sell you *all* the G-E fluorescent lamps you want!

The use of krypton in the 85-watt lamp is the latest development of G-E Lamp research, and practically every major improvement in fluorescent has come from General Electric—another reason why it always pays to insist on . . .



G-E LAMPS
GENERAL  ELECTRIC

GEAR CHECKING HEAD

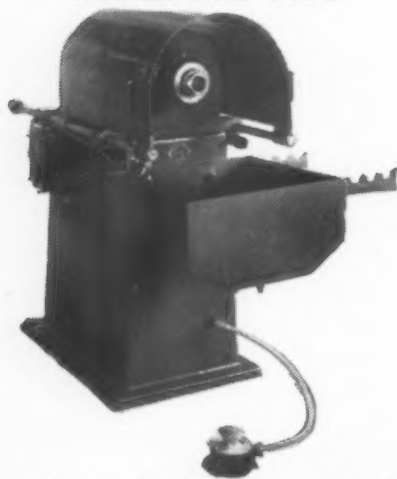


THIS Red Ring checking head is designed to determine the helix angle wobble of a gear, its size, eccentricity and roughness of roll, simultaneously or separately by rolling the work gear with a master gear under predetermined pressure. Either conventional or 90-degree drive gears may be checked with the same facility. Precision dial indicators located on the head behind the spindle yoke measure both axial and radial displacement. *National Broach & Machine Co., 5500 St. Jean, Detroit 13, Mich.*

LIGHTWEIGHT ALUMINUM PIPE WRENCH

WEIGHING less than half as much as a steel wrench, a new aluminum pipe wrench is said to meet all standard specifications for steel pipe wrenches. It is guaranteed by the company against breakage in normal use. Tests are claimed to have shown that the 18" wrench will withstand pressure of 13,500 inch-pounds. The wrench is manufactured in sizes of 14", 18", 24", 36" and 48". *Frontier Bronze Corporation, 4525 Packard Rd., Niagara Falls, N. Y.*

VARIABLE SPEED LATHE



TYPE VA4BC-A variable speed lathe can be used in industries where large, round parts must be polished, deburred, or otherwise finished. The part to be finished is held on the spindle by means of a chuck, face plate, or special fixture. Spindle speeds, in a ratio of 6 to 1 from a low of 100 rpm to a high of 4800 rpm are obtainable with a single-speed motor. The ratio is increased 12 to 1 when a two-speed motor is used. The machine has a hood which must be drawn forward over work before machine is started. *Schauer Machine Co., 2070 Reading Road, Cincinnati, O.*

SEVEN-POUND PORTABLE DRILL

THOR seven-pound portable electric half-inch "Silver-Line" drill is for continuous, stall-free drilling through toughest metals. Power is unequalled in its weight class, maker claims. Powerful ventilation through large slotted ports keeps the motor constantly cool under heavy load. The drill has a free speed of 500 rpm, full ball-bearing construction, 3-jaw Jacobs key type chuck. It is 11" long. *Independent Pneumatic Tool Co., 175 State St., Aurora, Ill.*

POWDERED METAL PRESS

TWELVE-TON capacity press for high speed and economical production of powdered metal parts, including porous bearings, alnico, cemented carbides, iron cores, thin-walled bushings, blind end bearings, parts with concentric projections, hemi-spherical shapes, flanged bearings, high-bronze bushings, and ceramic parts and carbon mixtures is known as the G-4. It is capable of applying pressures up to 12 tons simultaneously from both top and bottom. Maximum die fill is 4", maximum diameter of piece that can be produced is 2 1/4". *F. J. Stokes Machine Co., 5902 Tabor Rd., Philadelphia 20, Pa.*



STEEL CUTTING PRODUCTION TOOL

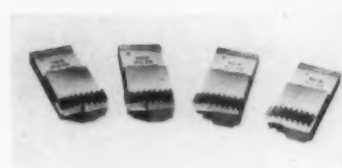
No. 218 Unishear cuts 18-gauge mild hot rolled steel (other materials in proportion) at a speed up to 15 feet per minute. Weighs only 4 3/4 lbs. Improved blade action "feeds in" the work so that little effort is required to cut straight lines, curves, angles and notches with hairline accuracy, it is stated. Furnished with rubber covered 3-wire cable, wrenches, clearance gauge and supply of lubricant. 115 volts. (Other voltages available). *Stanley Electric Tools, New Britain, Conn.*

SELF-ALIGNING DIE LIFTER



"MODERN" self-aligning die lifters for handling of dies, machine tools and other heavy objects consist of a swiveling eye, which accommodates standard lifting hooks, and a stud assembly at the bottom, which turns as a unit for attaching and removing the die lifter. The dye swivels freely at all times, and the stud cannot work loose. Available in four sizes, with maximum lifting capacities of 16, 28, 40 and 100 tons each. Bulletin available. *Modern Collet & Machine Co., 401 Salliotte St., Ecorse 18, Mich.*

CARBIDE DIE CHASERS



CARBIDE tipped die chasers with ground thread forms are available for selected applications on turret lathes, automatics and threading machines. In one example cited by maker, done on a turret lathe, a stud has a 3/4-10 NC thread which was cut with a tangent die head in 1/3 of a second at 2000 rpm (400 fpm). A high quality finish with a class III tolerance is obtained. Carbide chasers made it possible to machine the stud complete with the spindle turning at 2000 rpm for the entire sequence of cuts, eliminating need for shifting to a low threading speed. *Jones & Lamson Machine Co., Dept. 710, Springfield, Vt.*

LIGHTWEIGHT PRODUCTION ELECTRIC DRILL

ONE-QUARTER inch lightweight production all ball-bearing electric drill, manufactured by S. Wolf & Co., Ltd., London, England, is now available from American stocks. Designated Type EG2C, the tool is adapted to drilling in confined quarters, because of its low weight, short overall length and off-set of spindle. Suitable for operation of such things as drill stand, bench grinder clamp, etc. Drilling capacity in steel is 1/4" and in wood 3/8". *Fred L. Stuart, Room 1111, 33 West 42nd St., New York 18, N. Y.*

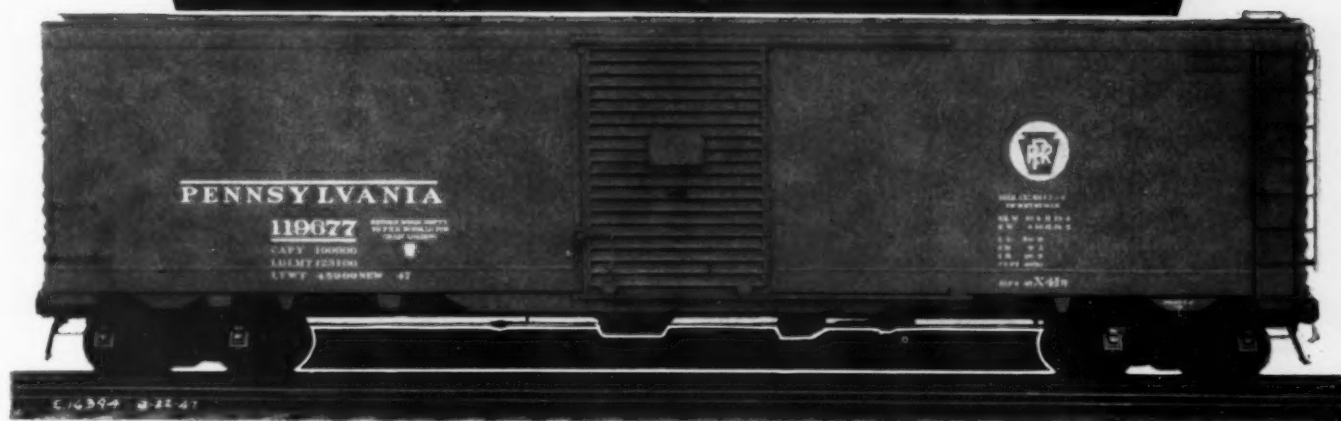
SILICONE INSULATED MOTOR



ILLUSTRATION shows size reduction possible in motors through use of silicone resins for winding insulation and silicone grease for bearing lubrication. The motor on the left is a Westinghouse 5-hp, 1750-rpm, 4-pole, silicone insulated all steel Life-Line motor in the 254-frame; the one on the right is rated the same but is Class A insulated and is in a 326-frame. The weight by using silicone is reduced from 250 lbs. to 145 lbs., or is 60% of the Class A insulated motor. Height is reduced 3 1/4"; length 7 1/4". *Westinghouse Electric Corp., P.O. Box 858, Pittsburgh 30, Pa.*

(Please turn to page 152)

It's Yoloy



For Pennsylvania's modern freight car construction

MANY new box cars built by the Pennsylvania Railroad in its Altoona Works are fabricated of Yoloy. By using high tensile steel, the famous Keystone road reduces the weight of its rolling equipment, speeds up service and insures better transportation.

Yoloy is Youngstown's high strength, low-alloy, nickel-copper steel. Because of its extreme toughness and extra strength, Yoloy can be used in thinner sheets and lighter

structural members than usual, without loss of over-all strength. The lighter weight construction thus effected not only reduces the cost of dead weight hauls, but permits increased payloads as well.

Yoloy also has unusual ability to resist corrosion, and is highly resistant to abrasion and shock at sub-zero temperatures. These properties of Yoloy contribute to lower maintenance costs and increase the life of the equipment.

Youngstown

YOLOY STEEL

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel

COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - TIE PLATES AND SPIKES - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS.

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BENCH GRINDER



NO. 266 bench grinder, powered by a ¼ hp, ball bearing, constant speed induction motor is suitable for light grinding, sharpening tools, buffing, polishing and wirebrush work. Features include: full ball bearing action, bearings enclosed against dirt and grit, safety type wide wheel guards, adjustable tool rests, toggle type switch enclosed in a moulded case located in base of grinder. Guards adjustable to permit grinding at any point on the circumference of the wheel. Speed at 60 cycles is 3450 rpm. Furnished with two wheels, 6" x 2", one coarse, one fine. *Stanley Electric Tools, New Britain, Conn.*

SNOW-BLOWER FOR WALKS AND DRIVES

DEVICE that scoops snow from sidewalks and driveways and blows it out of the way has been developed for use with the Roto-Ette, a single wheel power unit. The blower clears a path three feet wide and is said to do more work than ten men with shovels. Tests have shown snow can be blown from 15 to 20 ft. clear of sidewalk, or into truck, manufacturer states. The Roto-Ette power unit is guided by handle bars, with motor controls located on the handles. *Rototiller, Inc., 102nd St. and Ninth Ave., Troy, N. Y.*

ELECTRIC HAND LAMP

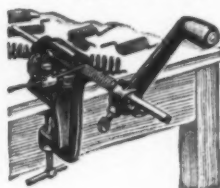


PORTABLE electric hand lamp with built-in charger has a spill-proof rechargeable battery with acid-proof plastic case that does not leak whether the lamp is held upside down, or in any other position. Three-ball charge indicator eliminates guesswork on condition of battery and does away with hydrometer tests. Main bulb gives powerful, 2000 ft. beam; small auxiliary bulb gives dim, diffused light. Literature available. *U-C Lite Manufacturing Co., 1050 W. Hubbard St., Chicago 22, Ill.*

BAG FOR HANDLING GLASS CONTAINERS

"SAF-T-BAG" for safe handling, carrying, packaging, storing, etc. of filled or empty glass containers is made in standard sizes to fit glass bottles from one quart up to five gallons. It can also be designed to fit any size or shape glass containers, glass or quartz tubes, flasks, gas or titration sampling bottles or other special fragile objects. The padding material has insulating qualities for reasonable retention of hot or cold temperatures. Literature available. *Benson & Associates, Inc., 536 Clark St., Chicago 5, Ill.*

SPRING MAKER



SPEDEX spring maker can be used with any size wire and can make springs of any desired diameter, pitch, number of coils, etc. A simple screw adjustment varies the pitch instantly. Both compression and extension springs can be made. It can be fastened to any bench. Assorted piano wire is supplied with the unit, and replacement wire kits are available. *General Cement Manufacturing Company, Rockford, Ill.*

CLEANER RESTORES DAMAGED THREADS

FLATTENED, distorted, or badly rusted right or left-hand threads on bolts or studs up to 2-9/16" diameter can be cleaned and restored with a new thread cleaner that is made in two sizes. No. 6103, 15 oz., has a bolt size capacity of 1" diameter. No. 6104, 2 lbs., has a bolt size capacity of 2-9/16" diameter. Threader is easily set and held to size by a single lock nut on the knurled handle. *Buckingham Manufacturing Co., Inc., Binghamton, N. Y.*

SWINGING SCAFFOLD WINCH



ALUMINUM "Saf-T-Swing" winch and stirrup unit for safe operation of swinging scaffolds, includes two winches (each with attached stirrup and 150 ft. of steel cable), guard rail and center post. Platforms up to 2½' x 20' in size may be employed. Loading up to 25 lbs. per sq. ft. is safely handled, with a rated capacity of 625 lbs. per winch. The unit can be easily raised or lowered at the rate of 20 ft. per minute. It incorporates three separate braking devices. Bulletin available. *Safway Steel Products, Inc., Milwaukee 13, Wis.*

ELECTRICAL OUTLET STRIP

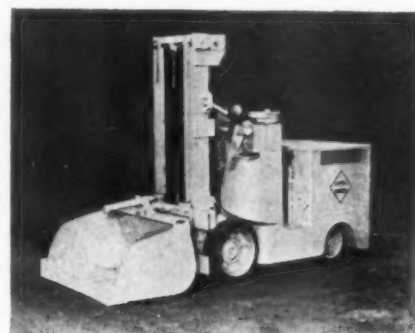


PLUG-IN strip provides a spread of electrical outlets at either 6" or 18" intervals along the top of, or on the walls behind laboratory tables, work benches and assembly counters, and gives maximum opportunity to plug in equipment for light, heat or power, reduces fire hazards, and eliminates the need for trailing extension cords. Installation is made by joining either 3' or 6' standard lengths. The channel and wire conductors may be cut to fit on the job with a hacksaw. *National Electric Products Corp., Chamber of Commerce Building, Pittsburgh 19, Pa.*

ALL-PURPOSE LIQUID GERMICIDE-DISINFECTANT

QUATERNARY ammonium type of liquid germicide-disinfectant known as Oakite Sanitizer No. 1 is designed for all-purpose sanitizing, and for control of mold, algae and slime. Features claimed are: it is stable; it is non-corrosive; recommended solutions are relatively non-toxic; it has rapid and sustained germicidal activity; it has wetting and penetrating action. It may be applied by mop, brush or by flooding areas to be treated. Literature available. *Oakite Products, Inc., 154 Thames Street, New York 6, N. Y.*

COMBINATION TRUCK & SCOOP

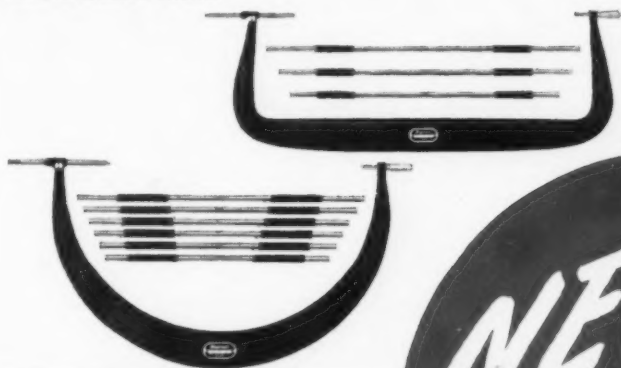


ELECTRIC power industrial truck is equipped with a special scoop for picking up, transporting, delivering or piling loose materials. It is attached to the truck's tilting and elevating mechanism and all controls are at the driver's station. The truck's upright column may be tilted forward 5 degrees from perpendicular, and backward 15 degrees. Capacity of the scoop is 12 cu. ft.; capacity weight of load is 2000 lbs. Speed of the truck with load ranges up to 5½ mph. The scoop is interchangeable with a standard type fork. *Elwell-Parker Electric Co., 4519 St. Clair Ave., Cleveland 14, O.*

(Please turn to page 156)

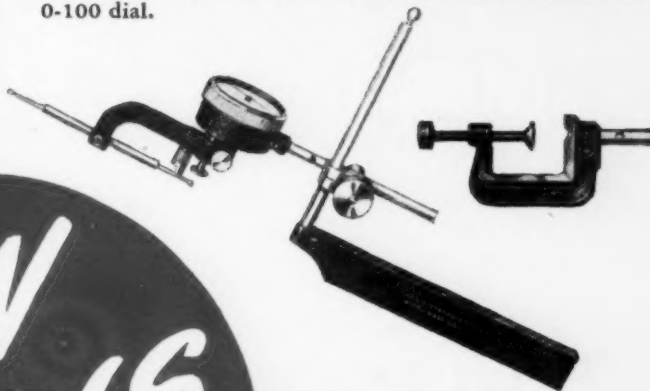
TUBULAR MICROMETERS "C" and "U" Types

Hollow frames combine lightest possible weight with extreme rigidity for greater accuracy, sensitive positioning and less fatigue in measuring dimensions up to 168" and more. Made with fixed, sliding or interchangeable anvils or dial indicator heads.



DIAL TEST INDICATOR No. 645 — Heavy Duty

For severe applications around machinery or for continuous use in general tool work. Special spiral-type mechanism of unusually rugged construction for sensitive, accurate action. Dial reads 0-50-0 or can be furnished with 0-100 dial.



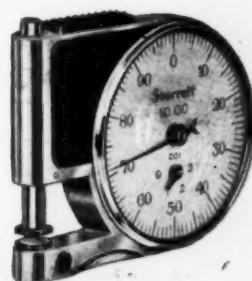
TOOL MAKER'S HAMMER With Built-In Lens

A handy little hammer for spotting in layout work, light hammering, heading, etc. Built-in magnifier saves hunting and fumbling for glass. Offset head permits working in close quarters.



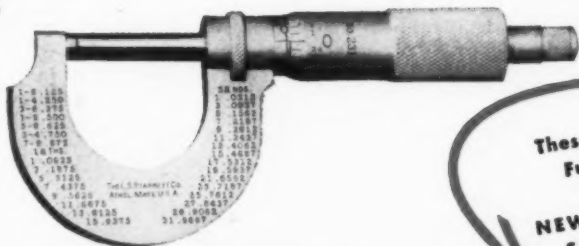
POCKET DIAL INDICATOR No. 1010

An ideal precision-made gage for measuring paper, leather, sheet metal, wire, plastics, etc. Indispensable for inspectors, salesmen, buyers, stock clerks. Dial reads in thousandths, 0-.100", range $\frac{3}{8}$ " with "rev" counter. Chrome plated case, all parts stainless steel, non-breakable crystal. Decimal equivalents on back.



"SATIN CHROME" MICROMETERS

An important new feature now on all Starrett Micrometers. Non-reflecting *Satin Chrome Finish* eliminates glare, retards corrosion, increases speed and accuracy. Also: Hi-Micro (mirror-like) finish on anvil and spindle faces; threads hardened, stabilized and ground from the solid; decimal equivalents marked on the frame; simple adjustment for wear.



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NOVEMBER, 1948

153

CLARK BUILDS BOTH... and

GAS-POWERED AND BATTERY-POWERED FORK TRUCKS

TRUCLOADER...



CLIPPER...



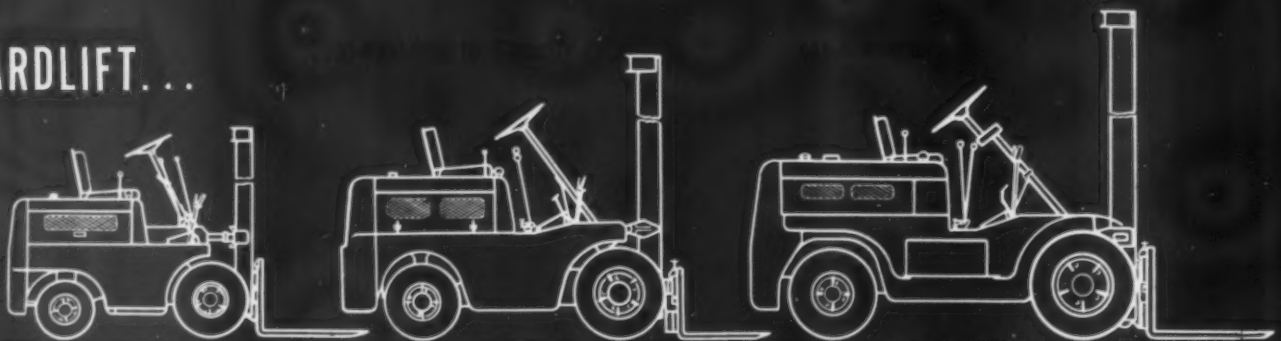
CARLOADER...



UTILITRUC...



YARDLIFT...



INDUSTRIAL TRUCK DIVISION, Battle Creek 23, Michigan

REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

BOTH BUILD PROFITS!

MATERIAL HANDLING *News*

The truly vital element in any fabricated product is the idea back of it.

When Clark undertook some 30 years ago to build Materials Handling equipment, it was with the idea that it could evolve new and better handling methods and that it could produce for their implementation machines that would excel all others. That these objectives have long since been achieved and that they are maintained is demonstrated by Clark's leadership in the Materials Handling field. Furthermore, *users* endorse these products with enthusiasm and are quick to point out that they embody all the qualities that Industry has come to expect from Clark's unique experience, competence, skill and idealism.

Clark builds *both* gas-powered and electric battery-powered machines with the clear

this **CLARK** team
sure has **EVERYTHING**
...A most complete line with
capacities from 1000 to
7000 lbs....**PLUS** unbiased
evaluation of individual needs.

intent that each shall be the best of its kind. Insofar as possible, parts of the two power types are interchangeable for the sake of production economies which are passed along to the user in the form of lower initial cost and negligible maintenance costs. And practically all parts are manufactured in Clark's *own* plants to Clark's *own* exacting standards of quality and master workmanship.

To an analysis of Materials Handling operations, Clark brings complete objectivity because it is the producer of both power types. Its sole aim is to determine which type will serve more efficiently and more economically under conditions involved.

For a complete line that has **EVERYTHING**, and for dispassionate and unbiased counsel concerning Materials Handling operations: **CONSULT CLARK.**



CLARK

EQUIPMENT COMPANY

BATTLE CREEK 23, MICHIGAN

OTHER PLANTS: BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN, U. S. A.

"THE NATIONAL GUARD DEFENDS AMERICA — JOIN NOW"

**prevent
Shutdown
LOSSES**



TO MARK PROGRESS

**BY INSTALLING
LADISH *Controlled Quality*
FORGED STEEL FITTINGS**

Costly shutdowns are prevented by using Ladish fittings because forging under rigid laboratory controls improves physical properties four ways:

1. Increases dynamic strength for greater resistance to hydraulic shock pressures.
2. Produces maximum toughness to withstand prolonged fatigue stresses from vibration.
3. Controls grain flow for better protection against expansion and contraction at temperature extremes.
4. Refines grain structure to retard both erosion and corrosion.

Ample stocks...complete line...size range $\frac{1}{8}$ through 4 inches...2000 through 6000 pound ratings...Carbon, Alloy and Stainless steels.

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VERNIER GAGE MAGNIFIER

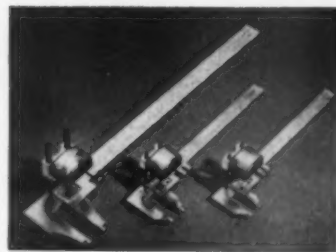


ILLUSTRATION shows device for magnifying the "hard-to-read" Vernier scales on calipers and height gages. They are made in three sizes to fit the most popular and widely used Brown & Sharpe and Starrett calipers and height gages. Sturdily made of spring brass and aluminum construction and finished in baked, black enamel. No. 100 is for 6" Vernier calipers; No. 200 for 10" height gages and interchangeable for use on 10" Vernier Calipers; No. 300 for 18" and 24" height gages. Stebar Co., 711 West Lake St., Minneapolis 8, Minn.

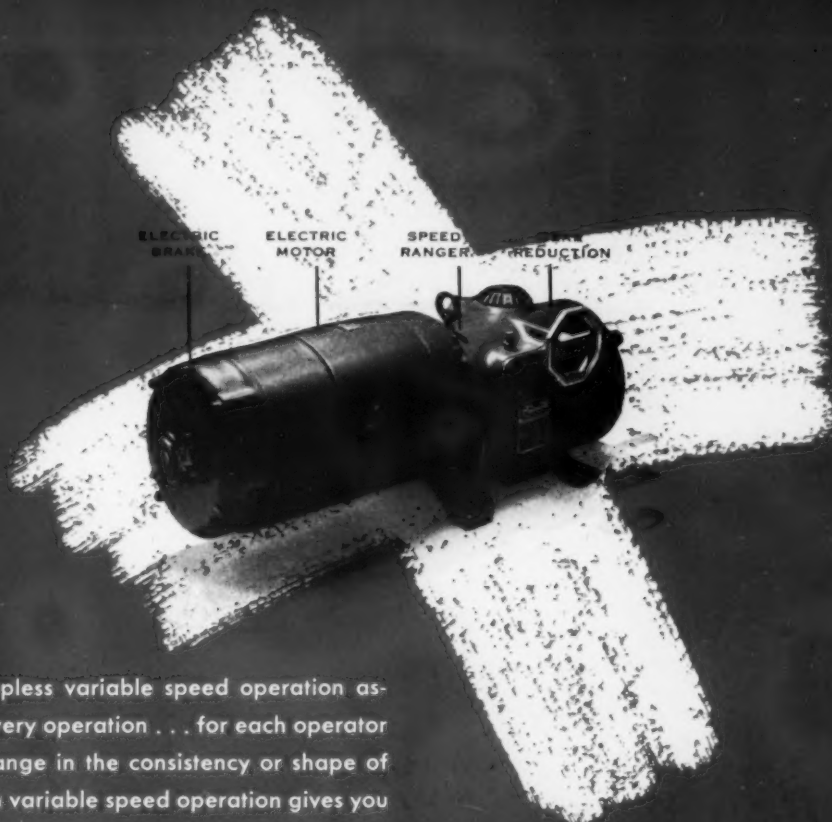
**3-LB.
TRIGGER-
ACTION
TACKER**

BOSTITCH Model T-5 trigger-action tacker for driving staples into wood and other material is for use in restricted places where there is not room enough to swing a hammer. Short, narrow base gets into small places, and tacker drives staple within $\frac{1}{16}$ " of inside corners, rabbets, moldings, etc. Three models available, using light, medium and heavy wire staples of several different lengths. Weighs three pounds. Bostitch, 499 Mechanic St., Westerly, R. I.



GRANNAN lubricator delivers a positive metered amount of oil or grease to each bearing in lubricating systems. It dispenses all lubricants from light oil to heavy greases through the same valve without alteration. It is a fully hydraulic, through flow valve, with no pockets or crevices to retard lubrication. It will lubricate up to 500 bearings or more in less than one minute while the machine is in operation. Titeflex, Inc., 533 Frelinghuysen Ave., Newark 5, N. J.

(Please turn to page 159)



On thousands of applications, stepless variable speed operation assures exactly the right speed for every operation . . . for each operator . . . the right speeds for each change in the consistency or shape of the material being processed. Such variable speed operation gives you plus value in higher rates of production, a better quality product and more efficient performance of your equipment and your operators.

Master Speedrangers provide this infinitely variable speed in compact, all-metal, mechanical variable speed units in a wide range of types and in sizes up to 5 horsepower.

variable speed operation offers you

PLUS VALUE

For example, see how the Speedranger on this machine incorporates an electric motor, a variable speed unit, a gear reduction unit and an electric brake . . . all standard Master units that easily combine into a compact, integral power package. This provides exactly the RIGHT horsepower, the RIGHT range of speed, the RIGHT features, in a unit that you can use RIGHT where you want it.

Write for Data 7525, a new 24-page book on Speedrangers, and see what a real job they can do for you.

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO





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HAS BEEN PRODUCING *QUALITY* PACKAGES

QUALITY...The Lasting Symbol

QUALITY is the lasting symbol of performance built into every package by the craftsmen of OLD DOMINION. The unseen ingredient of better packages, it largely accounts for the mutual loyalty of Old Dominion and its clients. Throughout the years we have enjoyed to the fullest this loyalty and guarded it zealously through

fair dealing, quick service and mutual confidence.

For quality packaging, consult Old Dominion . . . for generations, designers and manufacturing craftsmen of better boxes. Write today to Dept. 105 for an illustrated booklet showing Old Dominion's quality packages.



OLD DOMINION

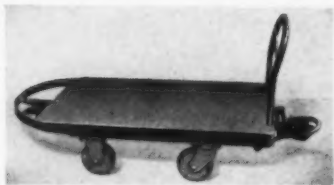
PLANTS LOCATED THROUGHOUT THE SOUTH

Box Company Inc.

CHARLOTTE, N. CAROLINA

THE SOUTHERN BOX MAKER WITH A NATIONAL REPUTATION

FLAT BED WAREHOUSE TRUCK



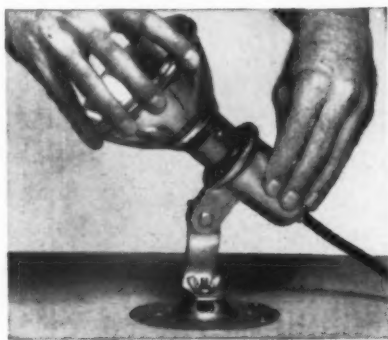
BED of this warehouse truck is heavy 10-gauge steel, and is formed so that it provides its own side flanges, without welding or joining. Five steel bars under the bed prevent it from bellying or sagging. Four inch steel channel bar welded under bed, running full length, absorbs shock and stress. Rear hitch is surrounded by a steel guard rail that prevents it from damaging goods. *Garrick Industries, Inc., 9018 West Olympic Blvd., Beverly Hills, Calif.*

SEALANT SALVAGES CASTINGS

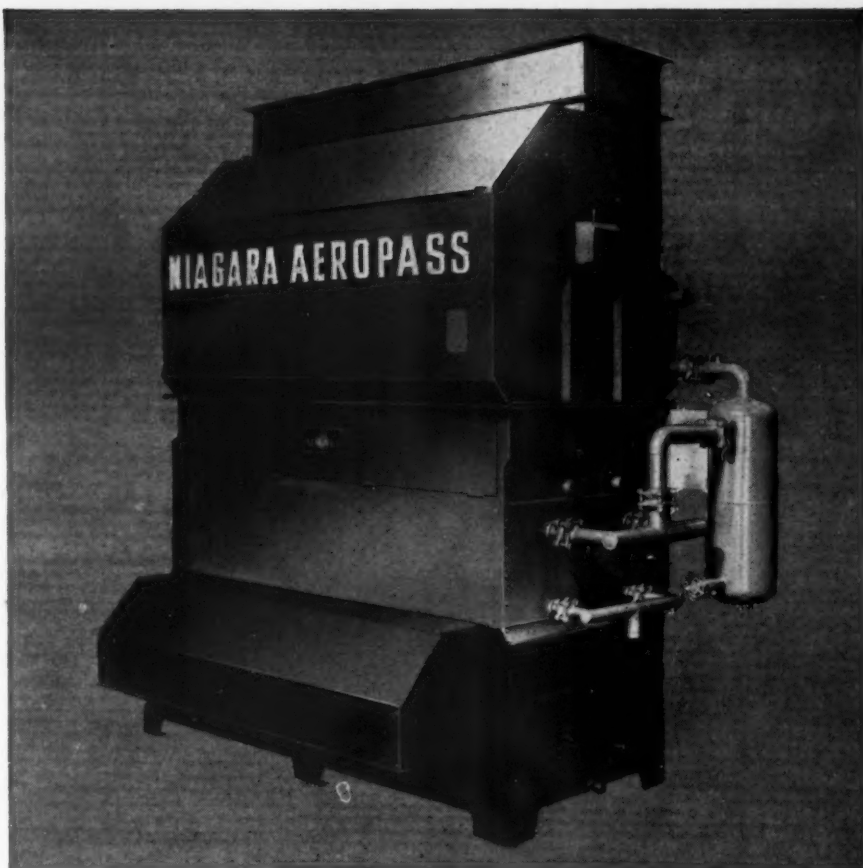


CHEMICAL sealant is said to salvage 99% of castings rejected due to porosity. Leakage in the castings has been eliminated by impregnation under vacuum and air pressure, maker states. It can be applied to aluminum and magnesium alloys, and to bronze, steel and grey iron. No gummy residue is left and subsequent coatings, such as anodizing can be applied either before or after impregnation. *Western Sealant Co., 9093 W. Washington Blvd., Culver City, Calif.*

ADJUSTABLE LAMP HOLDER



DESIGNATED Type L65P, a new, adjustable lamp holder for use with the G-E handy floodlight consists of a steel base and stand attached by means of a wing nut clamp to a die-cast zinc socket housing. The base is made to fit standard 3 1/4" and 4" outlet boxes. The socket is sealed against moisture and dirt by a treated asbestos gasket. The holder comes equipped with a twin-conductor, weather-proof cord. *Lighting and Rectifier Division, General Electric Co., Schenectady 5, N. Y.*
(Please turn to page 102)



New Condenser Cuts Refrigeration Costs Saves Cooling Water

● The Niagara Aeropass Condenser cuts the cost of refrigeration by running compressors at lower head pressure, saving up to 35% of power. It uses no cooling water.

The refrigerant gas passes thru two coils in an air stream. The first, "Duo-Pass" dry coil, removes the super heat by air cooling and condenses oil vapor. The second, condensing coil, drenched by recirculated water spray, condenses by evaporation, transferring to the air 1,000 BTU for every pound of water evaporated. This done at low temperature, no scale forms on condenser tubes to clog air passage.

Between the two coils is the "Oilout", which purges the system of crankcase oil

and dirt, keeps it always at full capacity.

The "Balanced Wet Bulb" control holds head pressure at the practical minimum. It automatically proportions the fresh air stream to the condensing load with the full benefit of power-saving on cool days, providing full capacity for peak loads.

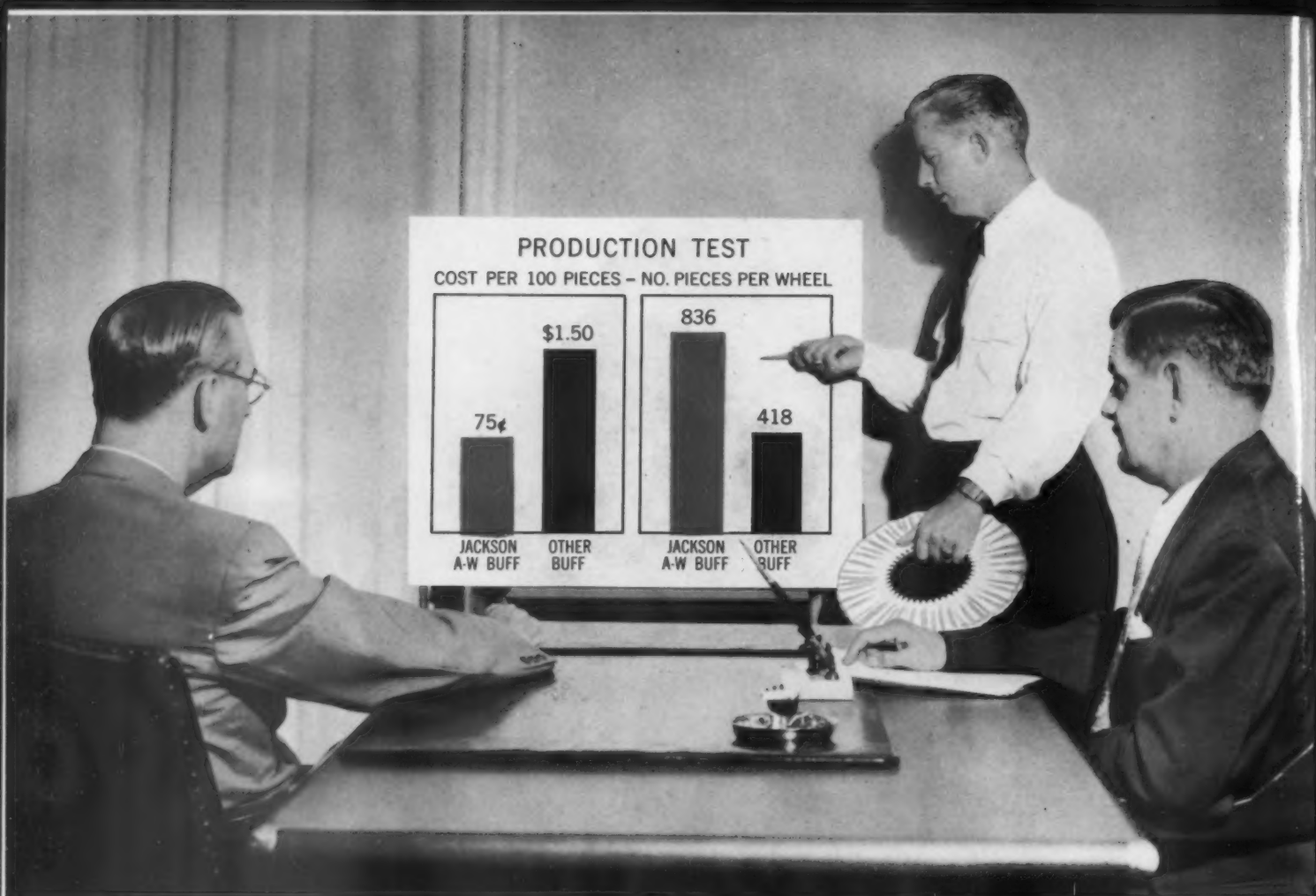
Niagara Aeropass design results from over fifteen years' experience condensing by air. It is completely trustworthy for year 'round operation. Users say, "It saves half the difficulties and labor of running a refrigeration plant."

Units range from 10 to 100 tons capacity. For full information ask for Bulletin 103.

NIAGARA BLOWER COMPANY

Over 35 Years of Service in Industrial Air Engineering
Dept. PU, 405 Lexington Ave. New York 17, N. Y.
District Engineers in Principal Cities

INDUSTRIAL COOLING  HEATING • DRYING
NIAGARA
HUMIDIFYING • AIR ENGINEERING EQUIPMENT



“—and we saved 50%”

PRODUCTION FOREMAN Reports: “In buying cotton buffs without production tests, no conclusion could possibly be reached as to the merits of one product or the other.”

PURCHASING AGENT Addressing the Production Foreman: “Did you find in your test on the buffs that I bought for you, any difference that would bring about a substantial saving to this company.”

PRODUCTION FOREMAN Addressing the Purchasing Agent: “Yes. The chart speaks for itself. One of our regular buffing wheels buffed 418 pieces at a cost of \$1.50 per hundred pieces. The Jackson Airway Ventilated Buff Wheel on the same job buffed 836 pieces at a cost of \$.75 per hundred pieces.*”

** from an actual case history.*

PRESIDENT Addressing Production Foreman and Purchasing Agent: “Your statement is that we will save 50%. That’s good news to me in the face of today’s rising production costs. It is apparent, and you have proved, that it is smarter to consider the final wheel cost and increased production rather than the initial cost of a section of buff. I shall presume that action will be taken immediately to use only the Jackson Airway Ventilated Buff.”

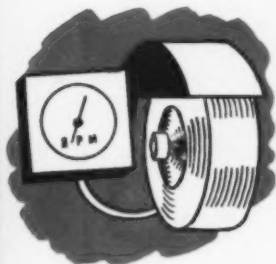
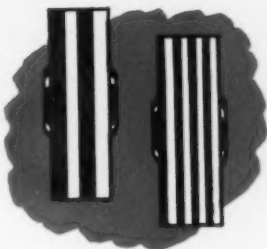
JACKSON

21-03 FORTY-FIRST AVE.

NOTE THESE EXCLUSIVE FEATURES:

HALF AS MANY SECTIONS

Jackson Airway Ventilated Buffs have more material per section . . . are twice the width of conventional buffs. You buy half as many sections.

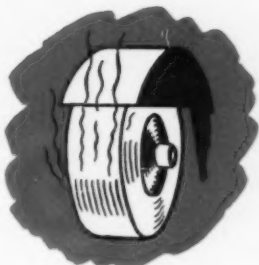


RUN AT HIGHER SPEEDS

Destructive internal heat generated at high speeds is eliminated entirely by the exclusive Jackson Airway Ventilation feature.

WILL NOT BURN

Ventilated side plates and internal center plates provide maximum air channels, prevent burning entirely . . . prolong wheel life.



WILL NOT RAVEL

Cut on the bias, these buffs cut faster, work cleaner . . . are free from raveling and lint. Hold buffing compounds longer.

LONGER WEARING

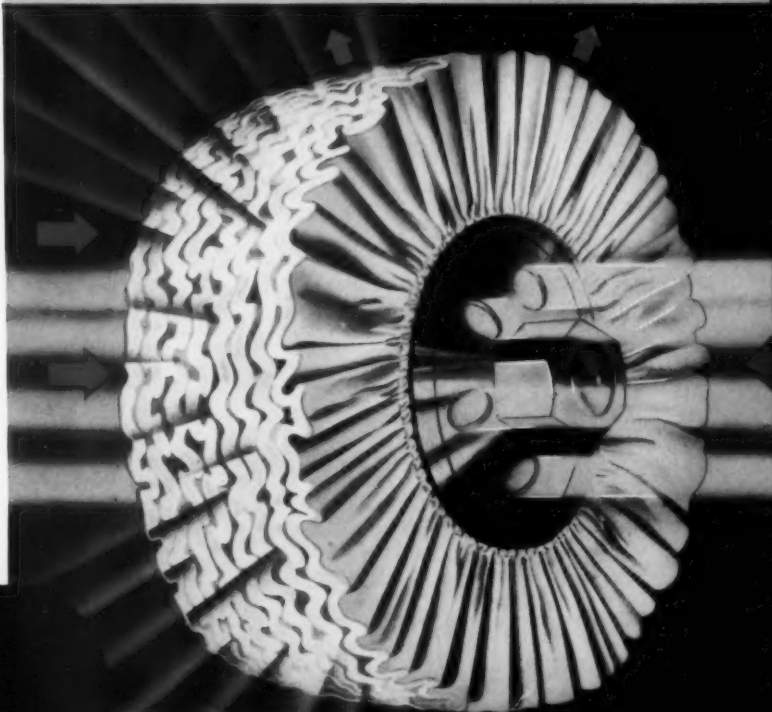
The superior design and construction of Jackson Buffs adds hours of production time per wheel life . . . at lower wheel costs.



Jackson Airway Ventilated Buffs are available to meet your particular buffing requirements on all metals and most plastics. We will prove our claim of a 50% Saving on your equipment. Write, wire or phone for a demonstration.

JACKSON AIRWAY Ventilated BUFFS outwear and outperform other types of buffs

Preferred by men who use them, these buffs are faster cutting, cleaner and cooler running, will not ridge work, use less compounds, require less effort for better finish. Preferred by men who are accountable for increased production resulting in lower costs because they buff more pieces per wheel . . . cut buffing wheel costs 50%. Bring your buffing operation up-to-date . . . insist on longer lasting, money saving Jackson Airway Ventilated Buffs.



WARNING NOTICE—Jackson Buff Corporation of Long Island City, N. Y., has rights to U. S. Patents Nos. 19,894 and 2,140,208 which have broad claims covering the air applied buff having means for the admission of air through the sides of the buff. Owner intends to protect all rights and also infringement.

JACKSON BUFF CORP.

LONG ISLAND CITY 1, NEW YORK

BUSINESS IN MOTION

To our Colleagues in American Business...

Here is another example of the fact that the cost of material per pound is not so significant as the cost of the finished part or product made out of it. In fact, judging material costs on a cents-per-pound basis may be completely misleading.

Revere during the war was asked by the government to apply its long experience with copper and brass to the manufacture of mill products in aluminum. It has remained in the aluminum business, making tubing, extruded shapes, and forgings. The latter naturally are custom-made to special designs. One of these seemed interesting to us, and the customer was asked if he would care to provide facts and figures that would show why he found it economical to choose an aluminum forging for this machine part.

He told us that he originally made this out of cast iron, which is, of course, an inexpensive material. An aluminum forging naturally costs more than an iron casting, in this case 5.2% extra. That would seem to be a big handicap to overcome, but a number of important savings when totaled together showed that this "costly" forging was actually saving considerable sums.

For example, the iron casting was $\frac{1}{8}$ inch oversize on top and bottom, to allow for machining; the aluminum forging is so accurate to dimensions that only $\frac{1}{32}$ inch is allowed for machining. This

means 75% less stock is removed when machining the two faces.

Machining cost is 75% less than on the iron casting, this figure including a loss of 10% of the castings due to defects uncovered by machining. Since the forging is dense and uniform, free from porosities, it is unnecessary to pressure-test it to make certain of its quality. This pressure test of the casting was an expensive process in terms of labor costs and time consumed. Doing away with it not only reduced costs but speeded up production.



When all the figures were in, it was found that this forging which was 5.2% more expensive actually cost 35.4% less as a finished part. And it was a better part, too, in every way.

If you are making or buying castings, Revere suggests that you investigate forgings. They have many structural advantages, and, as this example shows, may also offer economies. In fact, no matter what you make or buy, Revere recommends that you disregard the initial cost of materials. It may very well be that a more expensive material is less costly in the end and will not only save money but improve your product's appeal to your market. One final thought—suppliers to every industry will be delighted to collaborate with you in your studies of this subject. Why not call them in and add their knowledge to your own?

REVERE COPPER AND BRASS INCORPORATED

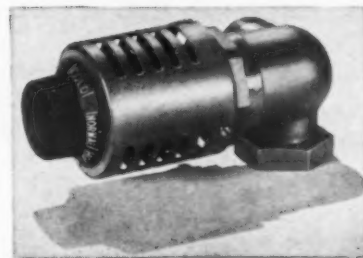
Founded by Paul Revere in 1801

☆☆☆

Executive Offices:

230 Park Avenue, New York 17, N. Y.

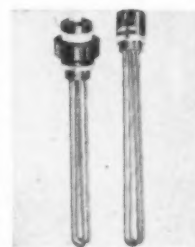
TEMPERATURE CONTROL



NUMBER 120 Thermotrol is a compact, self-contained temperature control for individual radiators, suited for offices, schools, hotels, hospitals, etc. It can be used on any two pipe system, steam, vacuum, vapor or hot water. The control is easily installed in place of a standard radiator valve, without wiring or any outside source of power. Features claimed are maximum comfort; fuel saving by directing heat only to the individual radiators and rooms where it is needed. Sterling, Inc., 3738 N. Holton St., Milwaukee 11, Wis.

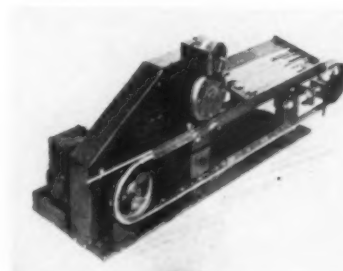
IMMERSION HEATERS

ELECTRIC immersion heaters have standard pipe-threaded screw plug for easy mounting through tank walls. The heaters are available with single- or 3-heat switch built into the terminal



end or without switch for thermostatically controlled applications. Various watts per square inch are available to suit various solutions, and alloy sheaths can be supplied for solutions that are corrosive to steel and copper. Edwin L. Wiegand Company, 7500 Thomas Blvd., Pittsburgh 8, Pa.

MARKING MACHINE



MOTOR-DRIVEN marking machine will print automatically on welding rods, solder bars, short-length tubing and similar ferrous and non-ferrous products of $\frac{1}{8}$ " to 2" diameter. Known as No. C-1055-A, the machine handles uniform and irregular lengths from 2" to 24". It prints continuously or intermittently as desired at 72 ft. per minute, and in perfect register, maker says. Bulletin C-1055-A available. The Pannier Corporation, 205 Pannier Bldg., Pittsburgh 12, Pa.

(Please turn to page 164)



Gleaming refrigerator gets a glide ride—from shipping room to destination. Dependable, efficient KIMPAK provides surface protection to Servel Refrigerators and other appliances. Photo through the courtesy of Servel, Inc.

Kimpak* Float Packaging

pads your products—and your profits

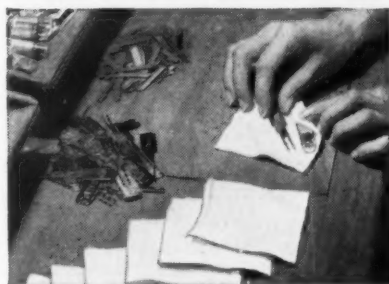
Damage to products in transit may result in quick cancellations and loss of business. So why take chances?

For safety's sake, cushion your product with KIMPAK* creped wadding. Whether your packaged units are as heavy as a refrigerator or as fragile as a vial, KIMPAK provides them with effective protection. You may make the same discovery as Cutter Laboratories of Berkeley, California, who report, "KIMPAK has cut down breakage to almost nothing!"

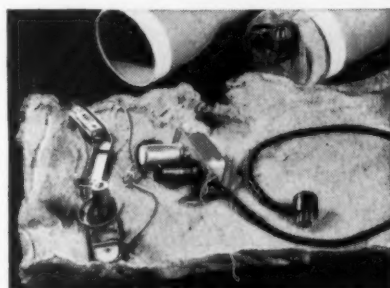
KIMPAK is a real money-saver many

ways. Adds but little weight or bulk to shipments, is remarkably easy to handle, and is highly shock-absorbent.

Whatever your packaging problem, there is a specification of soft, strong KIMPAK to help solve it. KIMPAK is made in a wide variety of thicknesses, backed or unbacked, in sheets, rolls or pads. It meets every requirement of the Four Basic Methods of Interior Packaging: Surface Protection, Blocking and Bracing, Absorbent Packaging, and Flotation Packaging. Make KIMPAK a part of *your* packaging.



Flotation Packaging—Vaccine vial. Photo courtesy Cutter Laboratories.



Blocking and Bracing—Phonograph pick-up arm and amplifying unit. Photo courtesy Jacobs Mfg. Co., Inc.

Free booklet on interior packaging. Call or write your local distributor for the fact-filled KIMPAK booklet that explains how to improve your packing techniques. He is listed in the Classified Directory. Or simply mail this coupon.

KIMBERLY-CLARK CORPORATION
Creped Wadding Division
Neenah, Wisconsin
Please send me, free, the illustrated KIMPAK packaging guide.
Name _____

Firm _____ P-1148

Type of business _____

Address _____

City _____ Zone _____ State _____

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES



CREPED WADDING

*T. M. Reg. U. S. & Can. Pat. Off.

The COMPLETE line...

Blue Devil
SOCKET SCREW PRODUCTS

**Socket
Cap Screws**
Sturdy, cold-
formed head
—continuous
fibre struc-
ture.



Socket Stripper Bolts
Accurately
ground
shoulder.



**Socket
Set Screws**
Precision-
ground thread
with rust-
resistant
finish—five
point styles



**Socket
Pipe Plugs**
Safer, strong-
er—excellent
seal. Made of
alloy steel.

**Flat Head
Cap Screws**
Flush type
screws. Fit
standard
counter-
sink.



Socket Screw Keys
Minimum play
between key and
socket.



Blue Devil
SOCKET SCREW PRODUCTS

SAFETY SOCKET SCREW CO.

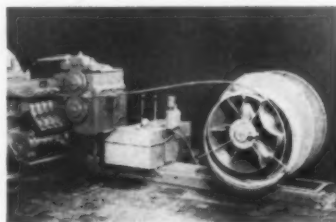
4458 N. KNOX AVENUE CHICAGO 30, ILL.
11 Park Place New York 7, N. Y.

LAMP CHANGER AND POLE

changeable sections that may be quickly joined together up to a recommended limit of 30'. Sections are locked together by a spring-actuated button which also permits quick disassembly. Each section is insulated. *McGill Manufacturing Co., Inc., Valparaiso, Ind.*

LIGHTWEIGHT
steel pole, available
for use with McGill
adaptable lamp
changers, is fur-
nished in 5½' inter-

WIRE STRAIGHTENER



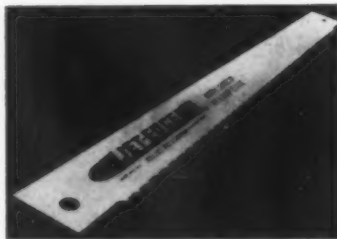
HYDRAULIC wire straightener is for use in plants having boltmakers, nut formers and other cold heading equipment using heavy wire, or coiled hot rods. It mechanically straightens a length long enough to pass through the feed tube and rolls, and supplies power to push the straightened length into the machine. Small model will handle wire having diameters of up to ¾", the medium up to 1¼" and the large model up to 1½". *The National Machinery Company, Tiffin, O.*

CARBIDE FEED FINGER PADS

export automatic screw machines. The pads are said to provide a high degree of wear-resistance, and non-galling properties. They assure positive feeding, do not mar the stock, and give long service. They are catalogued in internal diameters ranging from 9/32" to 1-1/16". *Kennametal, Inc., Latrobe, Pa.*

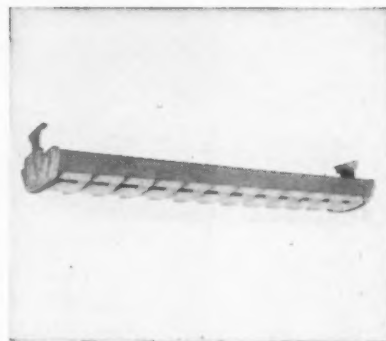
CEMENTED car-
bide feed finger pads
are for use in mas-
ter feed fingers of
Brown & Sharpe,
Hardinge, and Dav-

WELDED EDGE HACKSAW BLADE



SUPER high speed hacksaw blade that is shatter-proof and unbreakable is designated "Jet-Edge". The blade is said to have reduced cutting costs 20% to 50% for a number of users under exceptionally tough testing conditions. The blade has an extremely hard edge with excellent resistance to abrasion. Strong back can be tensioned much higher, faster speeds used, and greater feed pressures applied, without blade deflection, according to the manufacturer. *Millers Falls Company, Greenfield, Mass.*

2-LAMP FLUORESCENT LIGHT



TYPE CD-80 two-lamp fluorescent luminaire harmonizes with both modern and conventional architectural interior treatments for office or school use. It is available as a direct-indirect type with steel louvered bottom or as a semi-indirect type with translucent plastic bottom. The luminaire is well shielded and provides maximum diffusion with low brightness. Louvered bottom does not collect dirt. Translucent bottom is recommended where maximum diffusion and shielding are required for critical and prolonged seeing tasks. *Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pa.*

COMBINATION WARM OR COOL AIR CIRCULATOR

is no static or radio interference. Whirling fan blades or heated coils cannot be accidentally touched. Broad base prevents tipping over. Top knob permits easy moving. Available in copper, green or blue. *Howard Industries, Inc., 231 S. LaSalle St., Chicago 4, Ill.*

PULSAIRE circulator, which can be plugged into any outlet, gives cool or warm air at the turn of a switch. There

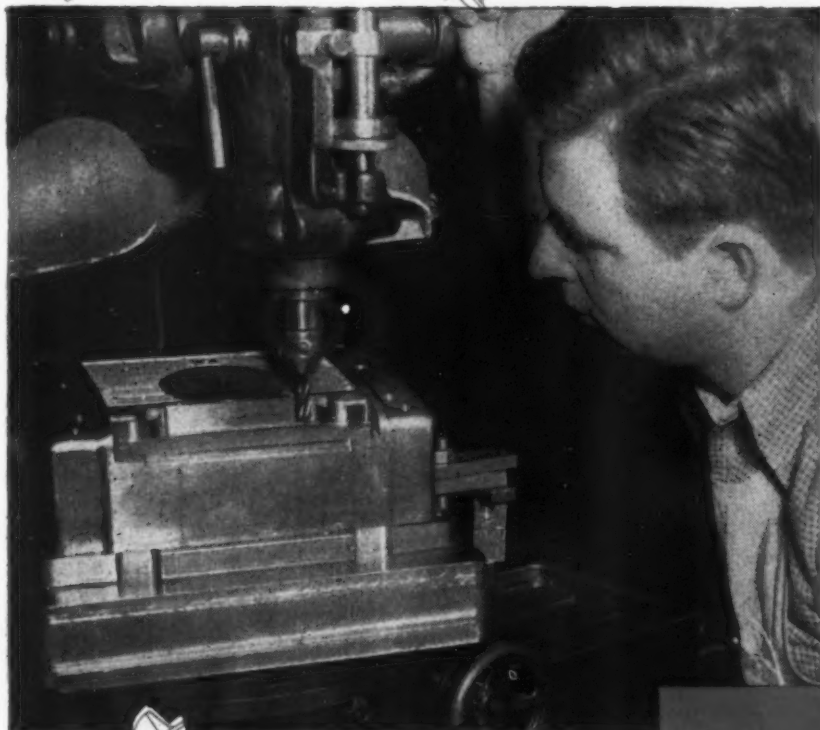
"HOOK-N-HAUL" TRUCK



DOUBLE-Hook feature of this hand truck enables the hook-arm to bite into totally closed wood boxes or cases; or into open boxes; while the upper hook takes hold of handles on metal tote boxes, etc. When the load is hooked, the operator pulls backward and the load slides onto the balanced tilting carrier plate. Bulky boxes can be "tumbled" onto the carrier plate. A slight push with the hook-arm overbalances the carrier plate and allows load to slide gently to floor. Literature available. *Teichtmann Industries, 714 West Wisconsin Avenue, Milwaukee 1, Wis.*

(Please turn to page 166)

If you use fast-spiral end mills, you'll want to try "Hi-Helix"



If your plant has discovered the many advantages of using fast-spiral end mills to cut intricate slots, pockets and keyways, you'll get *even better results* when you switch to "Hi-Helix" End Mills, Pratt & Whitney's improvement on the ordinary fast-spiral cutter.

Drawing on its long experience in the design and manufacture of precision tools, Pratt & Whitney has endowed "Hi-Helix" End Mills with special properties that make them cut cleaner, *longer*. Because such tools work continuously at the highest feeds and speeds, "Hi-Helix" End Mills are made only of high quality high-speed steel, hardened for maximum performance under any conditions. *And an exclusive P&W surface-treatment keeps "Hi-Helix" spirals from loading up or galling . . . keeps cutting edges always clear of chips . . . increases wear-resistance.*

Available in single-end or double-end styles, in both regular and two-lipped types, and in a complete range of sizes, "Hi-Helix" End Mills reduce over-all costs on the most intricate milling . . . deliver finishes so fine that hand-work is drastically minimized. It will pay you to investigate. For free descriptive booklet, write

PRATT & WHITNEY
Division Niles-Bement-Pond Co.
WEST HARTFORD 1, CONNECTICUT



"Hi-Helix" End Mill at work in General Electric's Plastics Division, milling mold for radio cabinets.

PRATT & WHITNEY
Hi-Helix
End Mills



"There is no better-paying investment
than the right tools for the job"

Just Remember the Buy-Word in—

The Case of the Dejected Dog



Purchasing Agent: My dog didn't win even third prize! The judge said his ears are too ragged . . .

Draftsman: Dog-eared, huh? Hey, that's what wear and tear do to our tracing paper drawings at the shop! There'd be no more of that if you would order Arkwright Tracing Cloth. It stands up under time and use.

Yes, Arkwright has long been the buy-word for permanence in drawings. Unlike tracing paper, it does not crack and tatter with repeated use—nor become opaque and brittle with time as a file reference record. There are six big reasons why Arkwright Tracing Cloth is the better buy for *any* drawing that may be needed later. Keep a supply ready—it's a paying investment!

Send for generous working samples of Arkwright and see how amazingly it passes the critical tests of fine draftsmanship. Arkwright is sold by leading drawing material dealers everywhere. Arkwright Finishing Co., Providence, R. I.

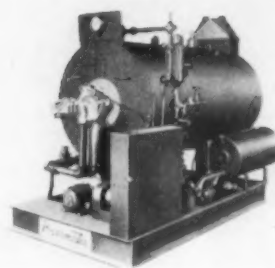
The Big Six Reasons Why Arkwright Tracing Cloths Excel

1. Erasures re-ink without feathering.
2. Prints are always sharp and clean.
3. Tracings never discolor or go brittle.
4. No surface oils, soaps or waxes to dry out.
5. No pinholes or thick threads.
6. Mechanical processing creates permanent transparency.



ARKWRIGHT
TRACING CLOTHS
 AMERICA'S STANDARD FOR OVER 25 YEARS

3-FUEL STEAM-GENERATING UNIT

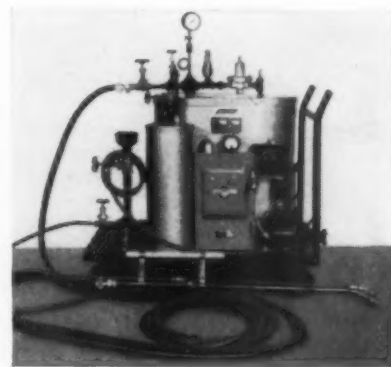


LIGHT oil, heavy oil or gas are burned with the same burner in this steam generating unit, making a change-over from one fuel to another a matter of 10 minutes or less. The unit is said to be suitable for heating, process, steam or power generation where interruptible or "off-peak" gas service rates are in effect, or where there is an oil shortage. The boiler system ranges from 15 to 200 hp and is fully automatic. Orr & Sembover, Inc., Reading, Pa.

BALLASTS FOR FLUORESCENT LAMPS

LEADLESS, terminal-board ballasts for G-E Slimline fluorescent lamps are available at following ratings: 300-ma operation of either the 64T6 or 72T8 lamp, 200-ma operation of the 96T8 lamp, and 300-ma operation of the 96T8 lamp. Shorter in length than the present designs, the new ballasts also feature reduced noise level and watts loss. Bulletin GEA-5106 available. General Electric Co., Schenectady 5, N. Y.

STEAM-JET CLEANER



PORTABLE, all electric, industrial steam cleaner can be used for cleaning walls, ceilings, windows, fixtures; sterilizing and cleaning wash rooms, and degreasing machinery, tools, etc. Steam is delivered to the cleaning nozzle where a solution, solvent or detergent is added and atomized with the high pressure steam as it strikes at jet velocity on the surface to be cleaned. The unit features a pressure tank which assures a positive flow of detergent or solvent to the nozzle, at desired rates and pressures. Livingstone Engineering Co., Dept. 82, 100 Grove St., Worcester, Mass.

(Please turn to page 168)

CHEMICAL USERS' GUIDE

to General Chemical Products for the Petroleum Industry

ALKYLATION

ANHYDROUS HYDROFLUORIC ACID

Grades or Strengths: 99.0% HF min. (one grade only)
Packing: Steel Cylinders, Tank Cars

SULFURIC ACID

Grades or Strengths: Standard
66° Baume—93.19% H_2SO_4
99% H_2SO_4
Diamond—66° Baume
Sulfuric Acid, Crystal—66° Baume
Packing: Tank Barges, Steel Tank Cars, Steel Tank Trucks, Steel Drums, also Carboys

OLEUM

Grades or Strengths: 15% free SO_3 (103.38% H_2SO_4)
20% free SO_3 (104.5% H_2SO_4)
65% free SO_3 (114.38% H_2SO_4)
Packing: Steel Drums, Tank Cars, Tank Barges

POLYMERIZATION or ALKYLATION

FLUOSULFONIC ACID— $HO:SO_2F$ (HSO_3F)

Grades or Strengths: Min. Content 98% Fluosulfonic Acid
Packing: Steel Tank Cars, Steel Drums

BORON TRIFLUORIDE, Ether Complex

Grades or Strengths: 47.88% min. BF_3
Packing: 5, 20 and 55 Gal. Drums; for Bulk Quantities write Baker & Adamson Products, General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector St., N. Y. 6, N. Y.

SULFONATION

SULFURIC ACID

OLEUM

SODIUM SULFATE, Anhydrous

Grades or Strengths: Standard, approximately 99.5% Na_2SO_4
Packing: Multiwall Paper Bags

ISOMERIZATION

MURIATIC ACID (Hydrochloric)

Grades or Strengths: Standard—18°, 20°, and 22° Baume
Packing: Rubber-lined Tank Cars, Rubber-lined Tank Trucks, also Carboys

DETERGENTS

SODIUM METASILICATE

Grades or Strengths: Granular, thru 10 mesh; Powdered, 90% thru 40 mesh
Packing: Multiwall Paper Bags, Fibre Drums

DISODIUM PHOSPHATE

Grades or Strengths: Anhydrous
Packing: Multiwall Paper Bags, Fibre Drums

TRISODIUM PHOSPHATE

Grades or Strengths: Coarse, thru 10 on 20 mesh; Medium, thru 20 mesh on 100 mesh; Standard, thru 20 mesh, 15-25% thru 100 mesh; Fines, thru 40 mesh, 50% thru 100 mesh

Packing: Multiwall Paper Bags, Fibre Drums

TETRASODIUM PYROPHOSPHATE

Grades or Strengths: Anhydrous, Powdered, 100% thru 20 mesh, 90% min. thru 100 mesh

Packing: Multiwall Paper Bags, Fibre Drums

TREATING AGENTS

ALUMINUM SULFATE

Grades or Strengths: Standard-Lump, $\frac{3}{4}$ "-2 $\frac{1}{2}$ " approx.; Ground, thru 8 mesh, 95% thru 10 mesh; Powdered, 97% thru 100 mesh; also Iron-Free Grade

Packing: Multiwall Paper Bags, Carloads in Bulk.

SODIUM SULFATE, Anhydrous

ACIDIZING

MURIATIC ACID (Hydrochloric)

MUD CONDITIONING

SODIUM SILICATE

Grades or Strengths: Clear and Opalescent Grades in a wide range of viscosities ranging from 38° to 60° Baume
Packing: Steel Drums, Tank Cars, Tank Trucks

DISODIUM PHOSPHATE

TRISODIUM PHOSPHATE

TETRASODIUM PYROPHOSPHATE

OTHER CHEMICALS

AQUA AMMONIA

SODIUM FLUORIDE

NITRIC ACID

HYDROFLUORIC ACID, 60%

OTHER HEAVY CHEMICALS

CATALYSTS and SPECIAL CHEMICALS

Companies requiring catalysts, addition agents, inhibitors, or other special chemicals "tailor-made" for their individual processes are invited to consult with General Chemical on their requirements. The same progressive research, technological "know how," and practical experience that has found the answer to so many petroleum chemical problems during General's long service to the industry may provide the solution to yours, too.

The products advertised herein are commercial chemicals having various uses, some of which may be covered by patents, and the user must accept full responsibility for compliance therewith.
Baker & Adamson Laboratory Reagents and Fine Chemicals

GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

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In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



Can
You
Name
it?*



Another name might be the
**PRODUCTION CASTING
OF THE MONTH**

**SUPERIOR FOUNDRY
OF CLEVELAND, OHIO**

**will show you monthly
an outstanding example
of production castings...**

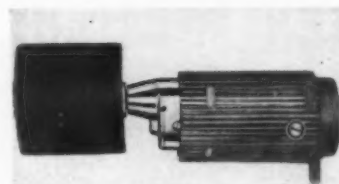
that our modern and completely staffed
and equipped Foundry turns out regularly
for satisfied customers. They know that
it saves them time, money, and produc-
tion headaches to always bring their
casting problems to



SUPERIOR FOUNDRY, INC.
3542 EAST 71st STREET • CLEVELAND 5, OHIO
MICHIGAN 3078

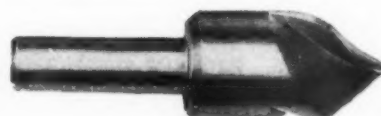
*You're so right if you identified this as a Combustion Chamber, which
of course must be made strong enough to withstand radical temperature
changes without cracking or negligible change of size.

POLISHER AND SANDER



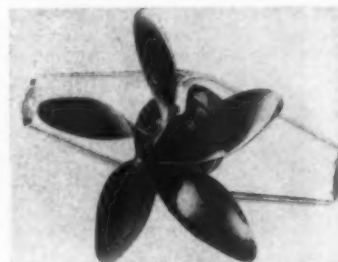
PORTABLE drum polisher and sander, known as Model 49, is for sanding and polishing irregular, flat, and curved surfaces, and features small size and light weight. Corrugated Vinylite covering for the motor housing provides a slip-proof hand grip. Sponge rubber drum gives a cushioned backing. No wrenches are required to change sanding sleeves—unscrew the nut on the end of the shaft and sleeve slips on and off. Wide variety of attachments and accessories. Literature available. *Portable Electric Tools, 255-59 West 79th St., Chicago 20, Ill.*

SPIRAL FLUTE COUNTERSINKS



HIGH speed steel, spiral fluted counter-sinks are designed to cut smoothly and reduce chatter. Three spiral flutes increase the area of contact between the cutting edge and the work and cut with a shearing action. Available in $\frac{3}{8}$ ", $\frac{1}{2}$ " and $\frac{5}{8}$ " diameters with $\frac{1}{4}$ " shanks and $\frac{3}{4}$ " and 1" diameters with $\frac{1}{2}$ " shanks. Cutters are available for these included angles: 60°, 82°, 90°, 100°, and others. *The Aero Tool Company, 6930 Avalon Blvd., Los Angeles 3, Calif.*

VENTILATING UNIT



ROTO-BEAM ventilating unit is said to be almost completely noiseless; non-corrosive; non-magnetic; free of vibration and distortion; and to require a minimum of current for operation. The propeller blade is molded in one piece of bakelite under 10,500 lbs. pressure per square inch. The full surface of the five blades is utilized from center to tip to impel the air in two beams, moving at different speeds. The unit comes with standard 110 volt a-c motor. Also available for d-c current and in other voltages. *Roto-Beam, 1755 N. Keeler Ave., Chicago 39, Ill.*

(Please turn to page 170)

The Idea

that became a Christmas tradition



We don't mean hanging up mistletoe... (although that can be a very rewarding idea).



We don't mean a holly wreath... (although it wouldn't be Christmas without one).



We don't even mean sending Christmas cards... (although that's a good way to let friends know you wish them well).

We DO mean THIS:

If you're wondering what's the best way to say "Merry Christmas!" to your business associates, customers, potential customers, and friends named Bill and Ed and Jim...

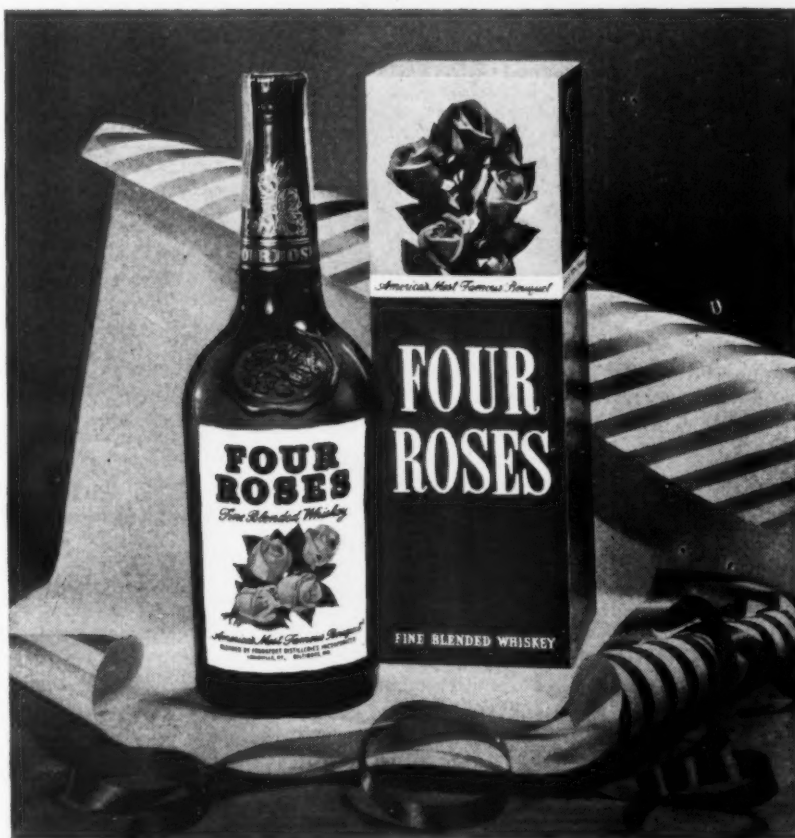
... say it with a bottle or so of Four Roses!

So many people give Four Roses for Christmas nowadays that it's become sort of a holiday custom—and well it might be. For you could search high and low without finding a gift that's half so welcome and sure to please—and one that offers such a simple solution of your gift problems!

Four Roses—so softly mellow and distinctive in flavor—is a gift that not only reflects your thoughtfulness but is also a compliment to the good taste of the man who gets it.

Your favorite retailer will be glad to make special arrangements for gift purchases.

FINE BLENDED WHISKEY—90.5 proof. 40% straight whiskies; 60% grain neutral spirits. Frankfort Distillers Corporation, New York.

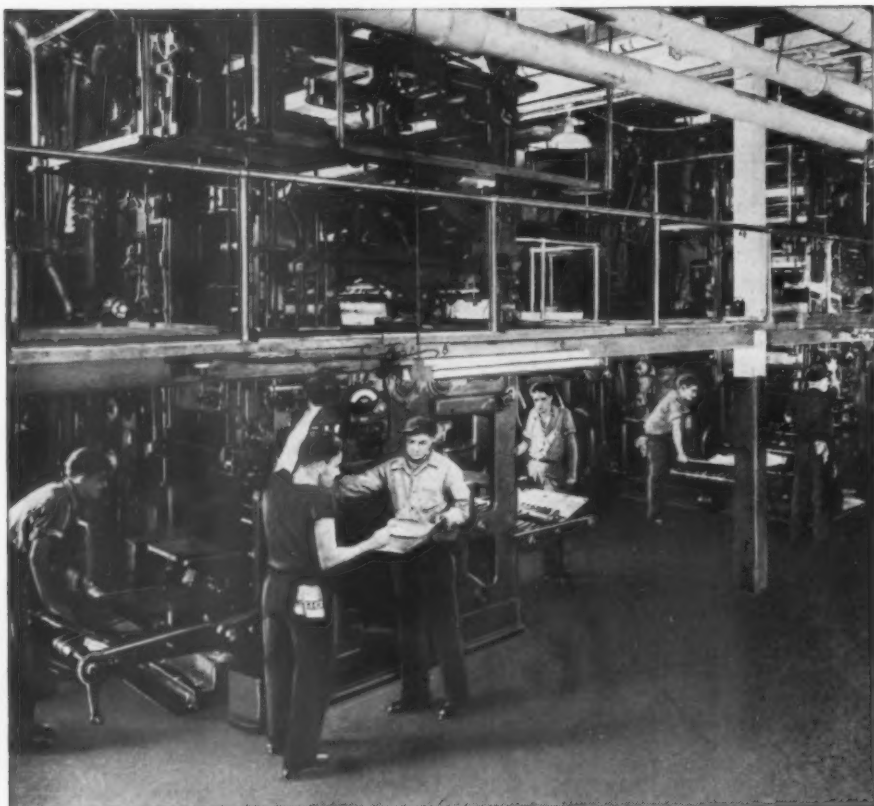


For the holiday season—in a special, attractive gift carton

FOUR ROSES

GIVE WHAT YOU'D LIKE TO GET—AMERICA'S FAVORITE GIFT WHISKEY

"KEX" Industrial Wiping TOWELS



... More Important Every Day to the
AMERICAN INDUSTRIAL SCENE

[View in McCall Corporation Press Room, Dayton, Ohio]

This prominent publisher of McCall's Magazine and Redbook has discovered the efficiency and economy of KEX Industrial Wiping Towels on a rental service basis.

The reason—KEX Industrial Wiping Towels are produced especially for wiping. They are soft, with no harsh seams, no hidden buttons to mar delicate surfaces.

Every wiping towel is thoroughly cleaned and inspected before delivery to you. They come in neat, easily stored bundles that help you control distribution.

Follow the lead of industrial leaders who overlook no opportunity to keep operating costs down—and efficiency up.



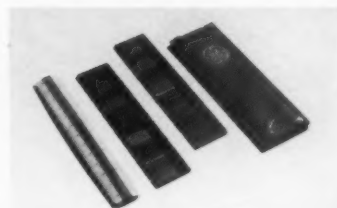
Nothing to Buy—No Expensive Inventory—Just a Low Monthly Rental. The first month should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX NATIONAL SERVICE, 295 Fifth Avenue, New York 16, N. Y.

"KEX" NATIONAL SERVICE
REG. U.S. PAT. OFF.

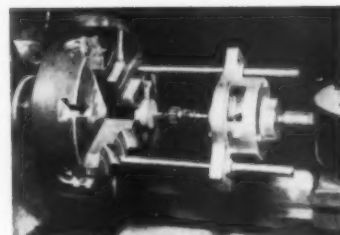


SURFACE ROUGHNESS SCALES



POCKET-SIZE surface roughness comparator for sight and feel comparison with machined finishes is composed of two small metal rules 6" long and 1¼" wide. These illustrate degrees of roughness ranging from the smoothness of bearing surface to the roughness of a flame cut. One side of each scale is divided into 12 surfaces, depicting a total of 24 different surfaces which are grouped into 10 degrees of surface roughness. General Electric Special Products Division, Schenectady 5, N. Y.

TURRET LATHE TAPPING HEAD



AUTO-REVERSE turret lathe tapping head allows the user to tap the hole and back out the tap without stopping the work or reversing the machine. Tap is fed into, and out of, drilled hole while work is turning in one direction. It can also be used on drill press work for production-tapping. For this purpose it has a 2 to 1 reverse, and uses guide-bars to hold and steady the case. Literature available. Errington Mechanical Laboratory, Inc., Staten Island 4, N. Y.

ADJUSTABLE AIR DIFFUSER



TYPE C-1 air diffuser has an adjustment mechanism that permits the unit to be used for heating, ventilating or cooling in any combination. The mechanism varies the vertical position of the third cone, producing different air flow patterns ranging from draftless diffusion to downward projection, without affecting air resistance. The amount of room air drawn into the outlet to be mixed with supply air depends on the adjustment setting and varies (Please turn to page 172)

**When spring steel must
suit your job to a
Check with Sandvik**



When your application demands a spring steel that is practically custom-fitted to specific physical requirements, call SANDVIK.

From long experience with the demands of a wide variety of spring steel applications SANDVIK has developed specialized steels to meet specific types of severe service. By composition and processing, SANDVIK assures high fatigue life, fine surface finish and accurate and uniform gauge.

- SANDVIK cold-rolled, high carbon or alloyed strip steels are supplied:
- In special analyses for specific applications
 - Annealed, unannealed or hardened and tempered
 - Precision-rolled in thicknesses from .001"
 - With bright finish or blue or yellow polished
 - With round edges or square edges
 - In a wide range of widths

Phone or write for complete information, technical advice or current stock lists.

SOME SANDVIK SPECIALTY SPRING STEELS

Band Saw Steels • Camera Shutter Steel
Clock and Watch Spring Steels • Com-
pressor Valve Steel • Doctor Blade Steel
Feeler Gauge Steel • Flapper Valve Steel
Knife Steels • Razor Blade Steel • Reed
Steel • Shock Absorber Steel • Sinkers
Steel • Spring Steels • Textile Steels
Vibrator Reed Steel



SANDVIK STEEL, INC.

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1736 Columbus Rd., Cleveland 13, Ohio, CHerry 2303
WAREHOUSES: New York and Cleveland

WASHERS

STANDARD AND SPECIAL

EVERY TYPE
EVERY MATERIAL
EVERY PURPOSE
EVERY FINISH



STAMPINGS

OF EVERY DESCRIPTION

- BLANKING
- DRAWING
- FORMING
- EXTRUDING

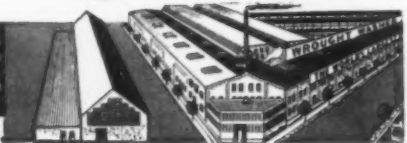
Let us quote on your requirements. MILWAUKEE WASHERS SINCE 1887

Over 22,000 Sets of Dies

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

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IT'S HERE! ...THE NEW "SAFETY" TYPE FOR CLEAR-CUT MARKING



S. T. M. PRECISION TYPE

Now . . . your products can be marked clearly, legibly and attractively with this new precision type. Extra deep engraving in sizes from $\frac{1}{16}$ " to $\frac{1}{2}$ " gives beautiful stamping in brass, aluminum, copper, steel, leather or hard rubber. Reverse characters for stamping molds. Made for any holder, press or marking machine.

Note neat, attractive stamping on metal ash tray. Also excellent for name plates, advertising novelties, etc.

Write for Complete Data



154 East Carson Street • Pittsburgh 19, Pa.

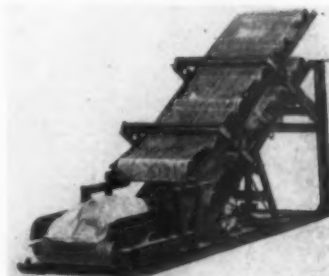
(Continued from page 170)
from 15% to 35%. Literature available. Anemostat Corp. of America, 10 E. 39th St., New York 16, N. Y.

CONVEYOR BELT FASTENER



SEPARABLE conveyor belt fastener consists of a series of U-shaped galvanized plates bolted to each end of the belt and joined together with a flexible hinge pin. It is made in one size for belts $\frac{3}{8}$ " to $\frac{1}{2}$ " thick. Maker states tests have shown a joint in a new 30" belt will stand a pull from 18,000 to 22,000 lbs. depending on the belt construction. The fastener is said to be especially suited for applications where conveyor belts must be extended or dismantled. *Flexible Steel Lacing Co., 4607 Lexington St., Chicago 44, Ill.*

BAG FLATTENER



FLEXOVEYER bag flattener is power driven by an electric motor which drives endless steel coil springs running over grooved steel rollers. Kneading and pressing action eliminates air from the bag and evenly distributes the contents, producing a flat, smooth bag which piles easier, stays piled better, and occupies less floor space. The bag flattener can be set to handle a bag of practically any thickness. Available with swivel casters or pneumatic tires, or with skids as shown. Bulletin F-10 available. *Flexoveyer Manufacturing Co., 315 E. & C. Building, Denver, Colo.*

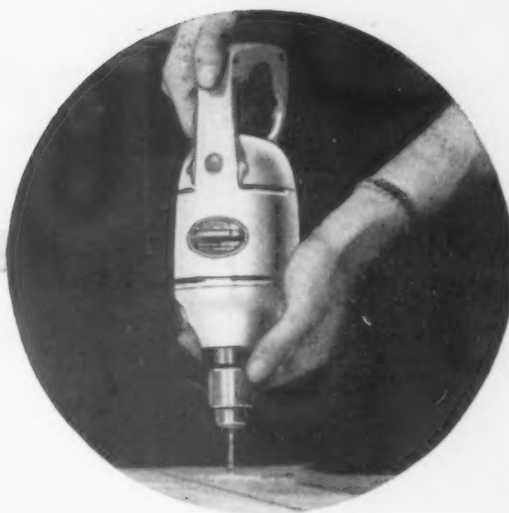
SPECIAL STEER TRAILER



THIS fifth wheel special steer trailer, designated No. 1650, measures 36" x 96"
(Please turn to page 174)



Drilling Bolt
Holes?



Drilling
Lead
Holes?



Driving Hole
Saws?



Boring through Heavy Timbers?

THAT'S THE SPOT **for Famous VAN DORN** **DRILL-POWER!**

Watch a Van Dorn Drill on the job and you'll marvel at its speedy drilling, easy handling, trouble-free running! Check a Van Dorn Drill's engineering and you'll be sold on its powerful Van Dorn-built motor, ball-bearing mounted; its extra-tough gears, shaft and chuck spindle; its husky housing; its unmatched, quality-built construction right down the line!

Then choose *your* Drills from the *world's most complete line* of Portable Electric Drills . . . VAN DORN! Sixteen models from 1/4" to 1 1/4" capacity in steel—a choice of speeds in many models—a choice of handles for most convenient operation—Drill Stands, Hole Saws and other attachments to increase their usefulness. Don't be satisfied with "nearly right" Drills. Get the **RIGHT** Drill for **EVERY** job from the big Van Dorn Drill Line . . . and watch your costs drop and your output zoom! Ask your nearby Van Dorn Distributor for a demonstration. Write for free catalog to: The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Maryland.

FOR POWER SPECIFY

"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)
PORTABLE ELECTRIC TOOLS

"LIKE HAVING THREE VALVES IN ONE"

LUNKENHEIMER

150 lb. S.P. BRONZE GATE VALVES



Fig. 2150
DOUBLE WEDGE DISC, RISING STEM



FIG. 2153

Embodies all the features in Figs. 2150 and 2151, but its design is varied to provide non-rising stem operation. Body is the same thus requiring only an interchange of trimmings to convert from the non-rising stem to the rising stem valve.

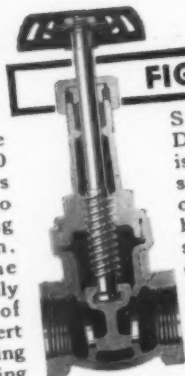


FIG. 2151

SOLID WEDGE DISC. The solid disc is ideal for services such as food processing lines and handling gummy substances, where entrapment of line materials within the disc is undesirable.

THE enthusiasm of maintenance men and engineers for the Lunkenheim new 150 lb. Bronze Gate Valves is understandable. Actually, a simple interchange of trimmings provides, from minimum stocks, a valve for every spot where a 150 lb. Bronze Gate Valve is needed.

Ruggedly designed throughout, each valve features the Lunkenheim developed and patented wear-resistant alloy stem material which eliminates failures due to stem thread wear.

Whether you have one . . . or thousands of 150 lb. bronze gate valves in your plant, you'll find definite advantages in the **LUNKENHEIMER Fig. 2150** line of 150 lb. gate valves.

PHONE YOUR DISTRIBUTOR

Design, construction and interchangeability are fully illustrated and described in Circular 574. Ask your distributor for a copy or write us direct.



ESTABLISHED 1862

THE LUNKENHEIMER CO.

"QUALITY"

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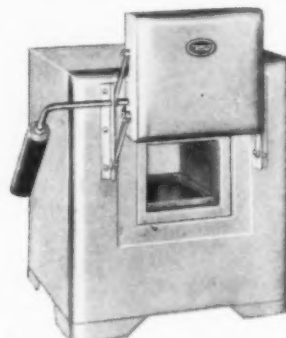
EXPORT DEPT 318-322 HUDSON ST., NEW YORK 13, N. Y.

See Our Exhibit at the 18th National Exposition of Power and Mechanical Engineering. Booth #52, Grand Central Palace, N. Y. Nov. 29th-Dec. 4th.

(Continued from page 172)

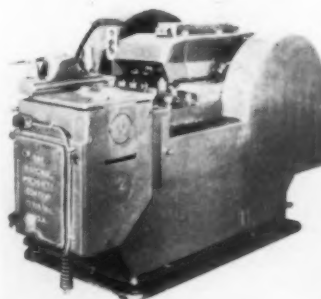
and has a clear oak deck, 2" thick. The deck height is 24". Rated capacity of the trailer is 4200 lbs. It has six-ply 18 x 5:50 pneumatic tired wheels. It has an all electric-welded frame of tee iron. Fifth wheel construction is of heavy steel plate with a machined ball race lubricated through Alemite fittings. Other deck sizes are available. Manufactured by Jakes Foundry Co. Distributed exclusively by Wayne Dameron & Associates, 1414 Eastwood Ave., Columbus 3, O.

ELECTRIC FURNACES



BENCH-type Temco electric furnaces are for laboratory uses and heat treating of carbon and high chrome steel parts and tools. The models are designated as Series 1500, 1600 and 1700. There are six sizes ranging in chamber dimensions from 4" wide to 3½" high and 4½" deep to 8½" wide, 7½" high and 18" deep. The furnaces are fast heating and may be operated up to 1650°F for continuous use and to 1900°F for short periods. *Thermo Electric Manufacturing Co., 470 W. Locust St., Dubuque, Iowa.*

COLD NUT FORMER



STANDARD single and double chamfered nuts, washer faced nuts, castellated nuts, lug lock nuts, Marsden lock nuts, and jam nuts have all been produced on this cold nut former. Only a minimum of cold forging is done on the blanks until the later operations, avoiding internal stresses caused by early work hardening. Machine features include a short rigid bed frame, patented overarm heading slide, automatic lubrication, and a four station transfer mechanism which turns the nut blanks 180 degrees after each stroke. *The National Machinery Company, Tiffin, O.* (Please turn to page 176)



Three big Udylite Semi-Auto-
matic Plating Machines are used
by Hilfinger Company.

"Speeds production - Saves man-hours"

... says Hilfinger, Large Toledo Plating Company

The Hilfinger Company, plating suppliers for some of the great names in American industry, choose Udylite equipment to speed production and save man hours.

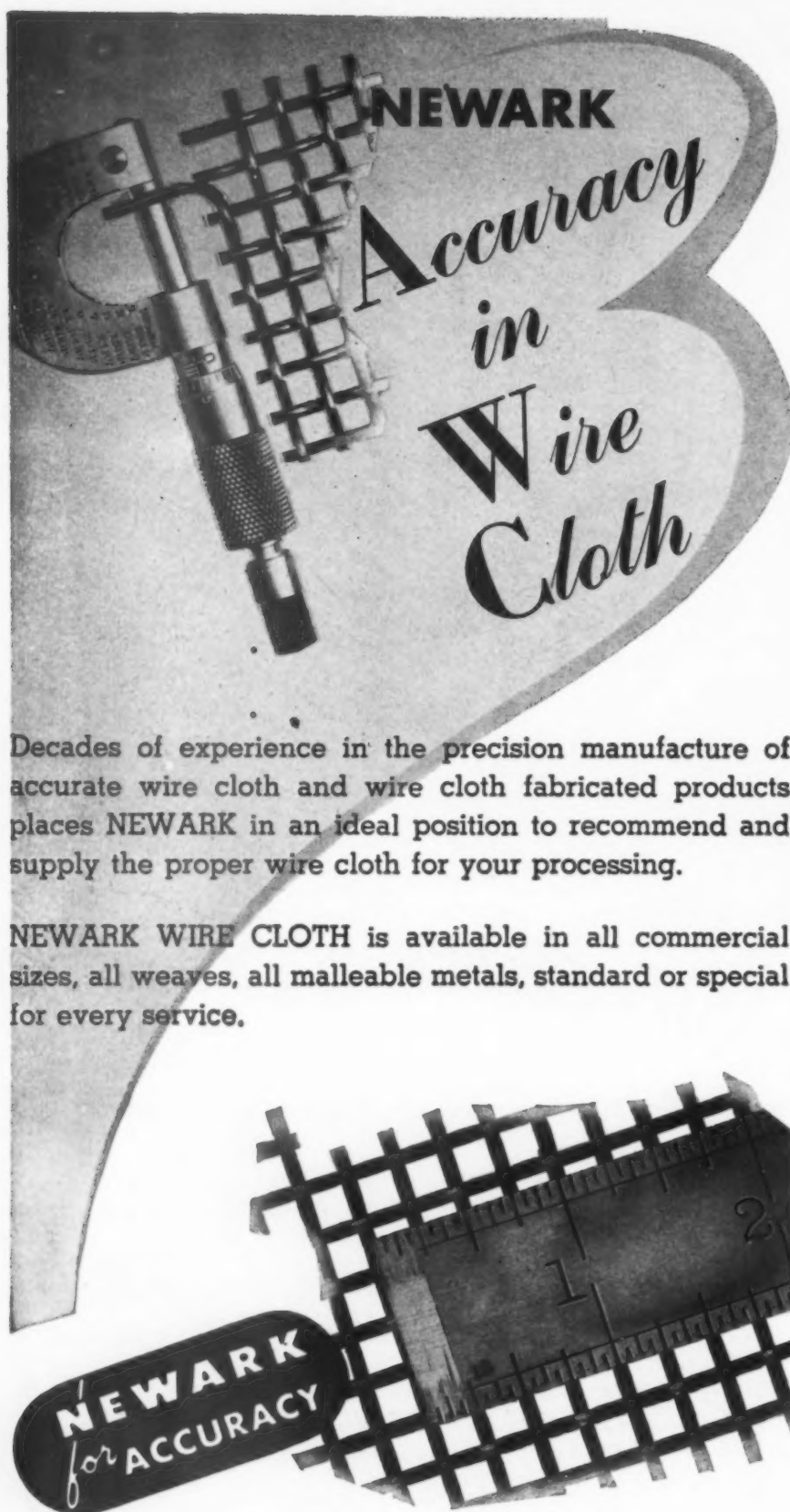
Like many other platers, large and small, they find Udylite equipment and plating processes increase efficiency and improve quality.

Udylite offers a complete line of plating and metal finishing equipment for all plants. Engineers are available for consultation with you regarding your individual requirements. Call in a Udylite technical man today. No obligation.



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Decades of experience in the precision manufacture of accurate wire cloth and wire cloth fabricated products places NEWARK in an ideal position to recommend and supply the proper wire cloth for your processing.

NEWARK WIRE CLOTH is available in all commercial sizes, all weaves, all malleable metals, standard or special for every service.

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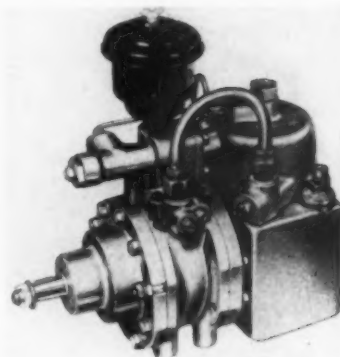
COMPANY

SHELL PRODUCING SYNTHETIC GLYCERINE IN NEW PLANT

Synthetic glycerine is now being produced by the Shell Chemical Corporation by a new and unique process in an \$8,000,000 plant just completed in Houston, Tex. The process was developed after years of research work in the Emeryville, Calif., laboratories of Shell Development Co. The only raw materials needed for manufacture are salt, water and petroleum. Glycerine is widely used by industry, and it is anticipated that volume production by synthetic means will help alleviate the present shortage of the vital chemical.

A fleet of specially-built aluminum tank cars for the transportation of the glycerine is an innovation at the plant. Aluminum will not cause discoloration of glycerine and hence prevents deterioration of the product during shipment.

NEW AIR COMPRESSOR MODELS



The Automotive Division of the Wagner Electric Corporation, 6400 Plymouth Ave., St. Louis, Mo., announces the development of new models of rotary air compressors. The compressors are air cooled, eliminating the necessity of connecting the unit to the engine's water-cooling system. Low operating temperature is maintained, preventing formation of carbon in the lines. Compressors are engineered to fine running balance and operate with uniform torque loading. There are two types, the conventional type compressor which is recommended for original equipment and field installation, rated at 7½ cu. ft. capacity, and the remote dome type compressor which is primarily for factory installation on original equipment. Bulletin KU-100, Sec. 2 gives detailed information about the compressors.

1 1 1

CUTTING PACKING COSTS

New edition of "Speed Packing Manual" is announced by the Sherman Paper Products Corporation, Newton Upper Falls, 64, Mass. The current edition is the sixth revision of the book which includes 199 step-by-step photographs and drawings to illustrate detailed instructions for packing a wide variety of products from clothing and jewelry to automobile parts and prefabricated houses. It is claimed that the new packaging ideas outlined in the book can save shippers up to 60% in packing costs. Copies of the manual are available without cost.

(Please turn to page 180)

HERE'S WHY ALL INDUSTRIES ARE TURNING TO NEW BULL DOG V-BELTS

Industrial experts agree that the most important factor in improving productivity is better equipment. As a result, they're scanning new products eagerly and giving them thorough workouts. And BULL DOG V-BELTS are among the newcomers that have more than won their spurs in every trial.

It's typical of the 70-year BWH fame for precision that these V-Belts weren't put on the market till they'd been exhaustively tested in the field. BULL DOGS proved they had real tenacity. They gripped tighter, slipped

less, stayed on the job longer. And here's the construction that accounts for this superior performance:

1. Exclusive Bull Dog Cord Section has higher tensile strength—able to carry the load and absorb shock.
2. Low Stretch, because exclusive Bull Dog Cords are processed in a new way. As a result there's less slippage, fewer adjustments, longer life.
3. Cool Running —thanks to quality-controlled compounds developed in BWH laboratories, which

don't crack or deteriorate under severe flexing.

4. Wear-Resistant covers — made of bias-cut heavy fabric to protect heart of belt from dirt, grease, moisture.

Specify Bull Dog V-Belts on all replacements. You'll find they mean "More Power To You" every time.

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearest BWH distributor or write to us direct.

Another Quality Product of
BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all principal cities

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1. REFINERIES—Still tower at affiliated refinery produces fuel oil for Allied customers.



2. TANKERS—Tanker from Allied's 10 million gallon Great Lakes fleet loads fuel oil at Chicago.



3. BARGES—Allied uses the largest fleet of oil barges on the Mississippi-Ohio R.

4. LA
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ALLIED OIL specializes in fuel oil and has the facilities to deliver complete fuel oil service to industrial plants and domestic consumers.



by TANK CAR



by TANKER



by TRUCK



by BARGE

Allied terminals are located for most efficient service in the area between the Mississippi River and the Alleghany Mountains.

Allied lake tankers and river barges provide low-cost transportation for light and heavy fuel oil. Allied tank-cars deliver fuel oil from our own terminals or direct from refineries to customer storage.

This flexible network of oil transportation combined with our own substantial storage facilities means that

ALLIED OIL COMPANY, INC.

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give complete fuel oil service



4. **LABORATORY CONTROL**—Fuel oil quality is tested and controlled in Allied's own laboratories.



5. **RIVER TERMINALS**—Fuel oil terminal at Follansbee, W. Va.—typical of Allied installations on the Mississippi-Ohio Rivers.



6. **LAKE TERMINALS**—Fuel oil terminal at Cleveland, Ohio—largest of Allied's Great Lakes storage and distribution plants.

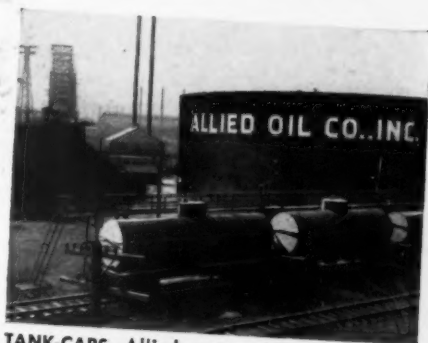
Allied is able to meet almost any fuel oil requirement.

QUALITY CONTROL—Allied laboratories and chemists control the specifications and quality of the fuel oil we deliver to our customers.

Allied field men are trained by experience to help you make the most efficient use of oil fuels.

Thousands of industrial plants and homes rely on efficient, convenient, dependable Allied Oil service.

Call Allied Oil whenever you have a fuel oil problem. We are fuel oil specialists—geared to give you complete service.



7. **TANK-CARS**—Allied owns and leases tank-cars to transport fuel oils.



8. **TRUCKS**—Transport trucks load up at Allied terminal for speedy fuel oil delivery.

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TUBING



**IS
ALL WORKING
METAL**

Why pay for metal you don't use?

The solid center of bar stock is often only dead weight—adding strength not actually needed for most applications. The three basic controllable dimensions of tubing, O.D., I.D., and Wall, makes it possible to specify and use two surfaces—inside *and* outside.

Why increase costs of fabrication and forming?

There is no costly drilling, reaming and machining necessary to provide for the passage of gases, liquids or solids. You can machine, shape or form Superior tubing for a variety of applications—at a reasonable cost.

To use metal thoroughly, specify

Superior Seamless or WELDRAWN† (Welded and Drawn) tubing. Available in a wide range of analyses of Carbon, Alloy and Stainless Steels, Nickel and Nickel Alloys, Beryllium Copper (Max. O.D. $\frac{3}{8}$ ") . . . Buy Superior and Save!

Write today for Bulletin #31, or contact the mill for the name of the nearest Superior Distributor.

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INAUGURATE DOMESTIC AIR PARCEL POST

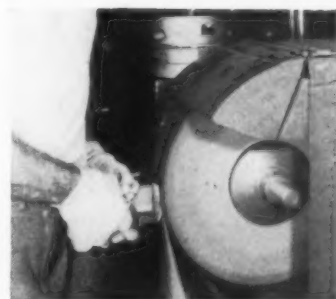
Domestic air parcel post was inaugurated recently over the more than 125,000 miles of the scheduled airlines, providing patrons of more than 42,000 post offices in the United States and possessions with the service.

Packages weighing more than eight ounces and not exceeding 70 pounds and 100 inches in combined girth and length can now be shipped by air parcel post. Registry, insurance and C.O.D. services are available.

Postage rates for Air Parcel Post are prescribed by zones, similar to surface parcel post, beginning at 55 cents for the first pound in the first zone and up to four cents for each additional pound in the first two zones; up to 80 cents for the first pound and 65 cents for each additional pound in the eighth zone.

1 1 1

MMM INTRODUCES CONTACT WHEEL FOR HEAVY GRINDING



A new contact wheel—the first designed for heavy grinding with abrasive belts at speeds of 10,000 surface feet per minute or more—has been announced by Minnesota Mining and Manufacturing Co., St. Paul.

Major advantages cited for belt grinding with the new roll, called the "K" contact wheel, are faster and cooler stock removal, lower production cost, and chatter-free grinding.

It can be used at the maximum speeds of modern equipment, according to its inventor, Arthur E. Kimball, the 3M company's manager of development and sales for heavy grinding products.

The combination of the high speed and the new wheel design enables abrasive belts to remove heavy metal stock faster, to perform better-finished snagging, and to eliminate frictional heat problems, Kimball stated.

The "K" wheels, he said, "have proven especially valuable in heavy stock removal, such as grinding gates and flashings on castings, cutting down welds and grinding through scale on forgings."

The "K" wheel is made in 8 and 16-in. diameters, in face widths of 2, 3, 4 and 6 inches. It is designed for use with cloth belts coated with silicon carbide or aluminum oxide mineral grains, the inventor said.

Reduction of grinding heat, accomplished by the design of the "K" wheel, lengthens belt life in two ways on most heavy stock

(Please turn to page 182)

Tap Performance is More Than a Tap—

with the

BESLY



"HELPING HAND"

You Get More

WHAT'S YOUR TAP PROBLEM?
Because tap performance is more than a tap you'll find Besly distributors well supplied at all times with information designed to help you achieve top efficiency in every tapping operation.



✓ TAP SHARPENING ✓ TAP LUBRICATION
TAPPING ALUMINUM, MONEL, PLASTICS
✓ and many other tapping operations

Yes, it's the Besly "Helping Hand" that makes a Besly user specify Besly taps again and again. It's more than a tap for it's all this that he gets from Besly—

IT'S FASTER DELIVERY—with Besly's central location and fast handling of high speed specials (24 hours on hardened blank jobs; 3 weeks on bar stock specials).

IT'S TOP TAP QUALITY—delivered *consistently* on each repeat order.

IT'S BESLY SERVICE—delivery "right now" on standard taps or qualified help to speed the solution of a new or unusual tapping problem.

IT'S COOPERATION—Alert and intelligent, the sort that busy production men need and welcome.

The Besly user gets *all* these plus values because they are all part of the Besly "Helping Hand"—service that you can put to work for you *now* to give your product better threading at lowest possible cost per tapped hole.

Besly's "Helping Hand" Has 5 Strong Fingers



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- Top Tap Quality
- Engineering Counsel
- Qualified Distributors

You'll Do
BETTER
with

BESLY

BESLY TAPS • BESLY TITAN ABRASIVE WHEELS
BESLY GRINDERS AND ACCESSORIES

CHARLES H. BESLY & COMPANY • 118-124 North Clinton Street • Chicago 6, Illinois
Factory: Beloit, Wisconsin

(Continued from page 180)

removal operations, it was pointed out:

1. Loading and glazing of the belt are minimized because the lessened grinding heat fuses fewer metal particles to the mineral grains on the belt, and because the increased centrifugal force of the high operating speeds throws out more cuttings.

In addition, the bond between the mineral grains and the belt is saved from the ill effects of high frictional heat.

2. High speeds increase the amount of cutting surface which contacts the metal per second, thus allowing less work pressure against the belt, resulting in less belt strain and less operator fatigue.

1 1 1

"BITUMINOUS COAL FACTS AND FIGURES 1948 EDITION"

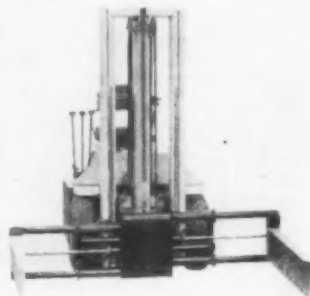
"Bituminous Coal Facts and Figures", a complete new data book about coal, profusely illustrated with graphs, pictograms and photographs and printed in three colors, has just been published by the Bituminous Coal Institute, public relations department of the National Coal Association, 815 Southern Building, Washington, D. C.

It is characterized as being the most complete ready-reference handbook on coal ever issued. It contains up-to-date information on bituminous coal reserves, production, distribution, consumption, mechanization, manpower, and a host of other subjects. It is a 148-page volume of modern, easy-to-read graphs, illustrations, statistics, tables and text.

PALLETLESS MATERIALS HANDLING

Illustration shows the Hyster Load-Grab, an attachment for the Hyster "20" and "40" lift trucks, designed for efficient handling capacity of 1,780 lbs. on the former and 3,350 lbs. on the latter, the arms of which will squeeze-grip bales of cotton, rags or wool, cartons or boxes, drums or barrels with equal facility.

The steel arms are operated and hydraulic controlled from a lever at the driver's right. They spread from a minimum 17 inches to a maximum 62 inches



on the "20", and 66 inches on the "40", and can be lowered to within six inches of the floor. An adapter plate will permit lowering standard Load-Grab arms or standard lift forks to ground level.

Optional equipment for special application of the device include—spike faced arms for clutching wooden boxes and crates, rubber faced arms for particularly

gentle handling, drum handling load arms for transporting from one to three drums per trip, and conventional pallet load arms. Literature available.

1 1 1

WOOD POLE STANDARDS

New American Standard Specifications and Dimensions for Wood Poles, 05.1-1948, was developed by a sectional committee of 21 national organizations concerned with the production or use of wood poles or with the technology involved in determining their relative strength and durability, states the American Standards Association, Inc., 70 E. 45th St., New York 17, N. Y. This committee was formally organized in 1924 and has been in existence continuously ever since, working under the sponsorship of the ASA Telephone Group i.e., the Bell Telephone System and the United States Independent Telephone Association. Copies of the present edition, which includes the specifications and dimensions for all species of poles in one document, are available from the American Standards Association at 50¢ each. The edition is a revision of the following: American Standard Ultimate Fiber Stresses of Wood Poles, Specifications and Dimensions for Northern White Cedar Poles, Specifications and Dimensions for Western Red Cedar Poles, Specifications and Dimensions for Chestnut Poles, Specifications and Dimensions for Southern Pine Poles, Specifications and Dimensions for Douglas Fir Poles, and American War Standard Specifications and Dimensions for Miscellaneous Conifers.

BENDIX-SCINTILLA

ELECTRICAL CONNECTORS

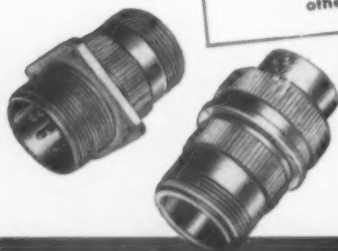
the finest money can buy!

Available in all Standard A. N. Contact Configurations.

Write our Sales Department for detailed information.

THESE ARE THE FEATURES THAT HAVE MADE IT *the* QUALITY CONNECTOR

- Moisture-proof, Pressure-tight
- Radio Quiet
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- Fewer Parts than any other Connector
- High Arc Resistance
- Easy Assembly and Disassembly
- Vibration-proof
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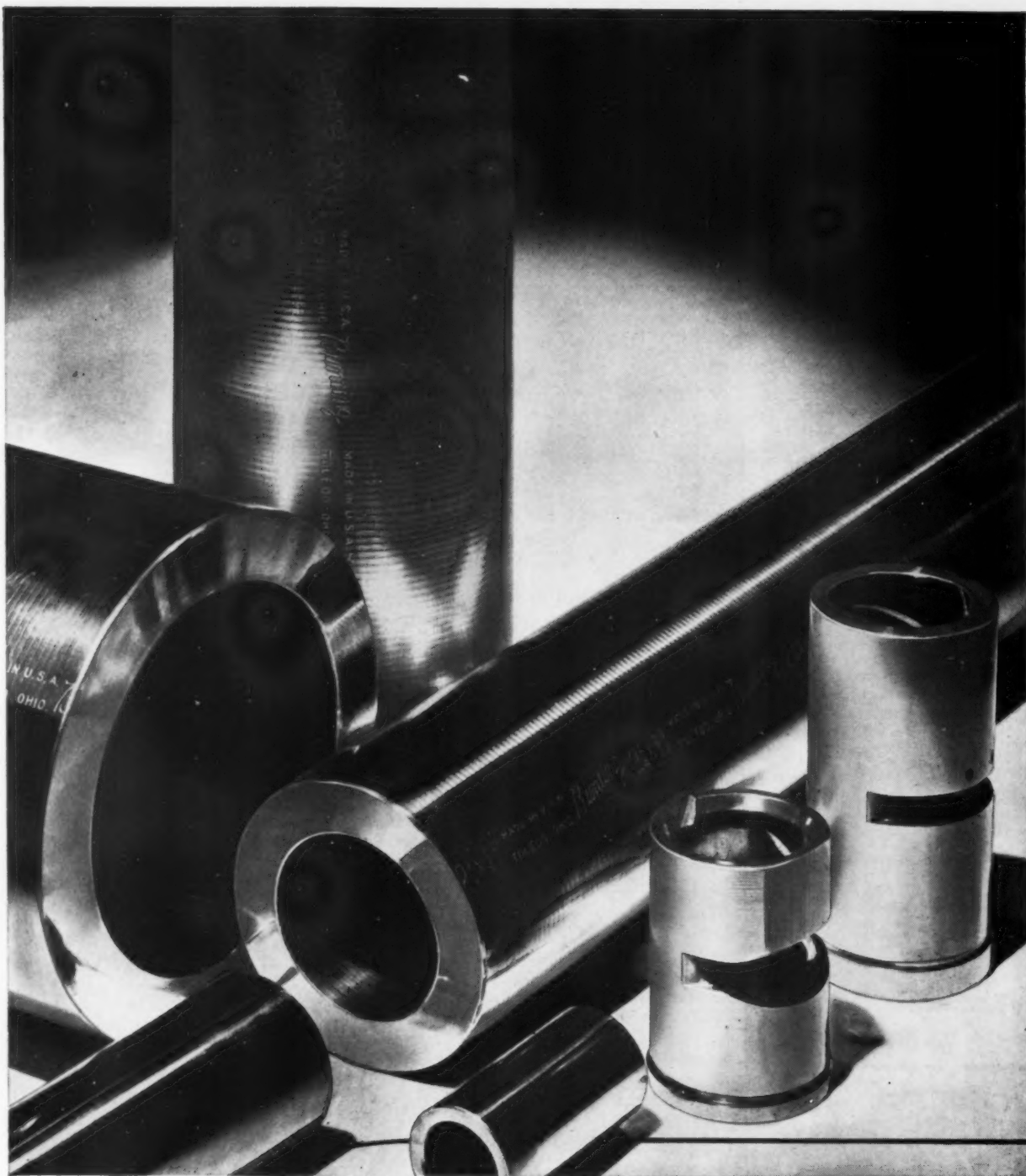


Plus this Important Advantage—
PRACTICALLY NO VOLTAGE DROP!

Contacts that carry maximum currents with a minimum voltage drop are only part of the many new advantages you get with Bendix-Scintilla® Electrical Connectors. The use of "Scinflex" dielectric material, an exclusive new Bendix-Scintilla development of outstanding stability, increases flashover and creepage distances. In temperature extremes, from -67° F. to +300° F., performance is remarkable. Dielectric strength is never less than 300 volts per mil. Bendix-Scintilla Connectors have fewer parts than any other connector on the market—and that means lower maintenance costs and better performance.

*TRADEMARK





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BUSHINGS

PRECISION BRONZE BARS

Availability and Quality

Bunting Bronze Bars and Bearings, recognized as unsurpassed in Quality, are available from the stock of the Bunting Distributor in your community. The Bunting Brass & Bronze Company, Toledo 9, Ohio.

Bunting

61



POSTAL RATES GO UP for nearly all classes of mail, effective January 1, 1949.

Don't let these new rates catch you with your scales down. Get an accurate new Triner mail or parcel post scale. Its new easy-to-read chart shows the *exact* postage required—no guessing—no postage waste.

Even a half-dozen 5 or 10¢ stamps wasted daily is nearly \$100 per year. Triner scales prevent such waste. They eliminate uncertainty where parcels are near the line for more postage.

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Triner Scales are designed for the U. S. Postal Dept., where 190,000 are now in use in post offices. Also used by 50,000 business firms.

TRINER eliminates costly "Zone of uncertainty"



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SCALES**

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ADDRESS

CITY STATE

SILICONE DEVELOPMENTS BY GENERAL ELECTRIC

A new G-E silicone rubber-coated glass cloth which will withstand operating temperatures as high as 520°F; a new adhesive for bonding silicone rubber to itself, metals and ceramics; and many new applications for molded and extruded materials were the major developments achieved by the General Electric Chemical Department in the silicone rubber field during the past year.



Cloth treated with G-E Dri-Film repels water like a duck's back.

Particularly designed for use as a gasket in radial motor and other aircraft engines, the G-E silicone rubber-coated glass cloth, which is available in both sheet form and fabricated parts, possesses excellent tensile and tear strength and may be applied in many types of electrical and mechanical equipment where high physical properties are required. The Company said the new material also is commanding considerable attention as an ironing surface by laundries, curtains in bread baking ovens, and, in tape form, as high temperature cable insulation.

Versatile Adhesive

The new adhesive possesses properties similar to silicone rubber itself, remains flexible and resilient over temperatures ranging from -70° F to 520°F and withstands continuous temperatures of 300° to 250°F in a dry air circulating oven. It also can be used to bond glass to glass, glass to metals and metals to metals.



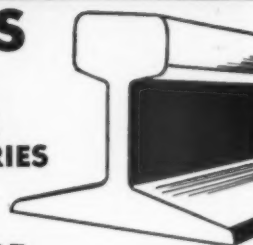
The silicone oils and emulsions provide excellent mold release because of their stability at high temperatures.

The adhesive has proved especially useful in securing rubber door gaskets directly to oven doors thus eliminating the need for clamps and bolts. It is also effective for joining the ends of extruded cured stock to form O-rings of uniform thickness. Previously these gaskets had to be made by molding the loose ends of uncured stock together in a press causing one portion of the ring to be smaller than the other.

(Please turn to page 186)

✓ *for*
**STEEL-SHEET
PILING**
and light-weight,
corrugated piling

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and
TRACK
ACCESSORIES**



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PHONE** **FOSTER**

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WARRANTED TO BE REPRESENTED . . . AND
IS SUBJECT TO PURCHASERS INSPECTION AND
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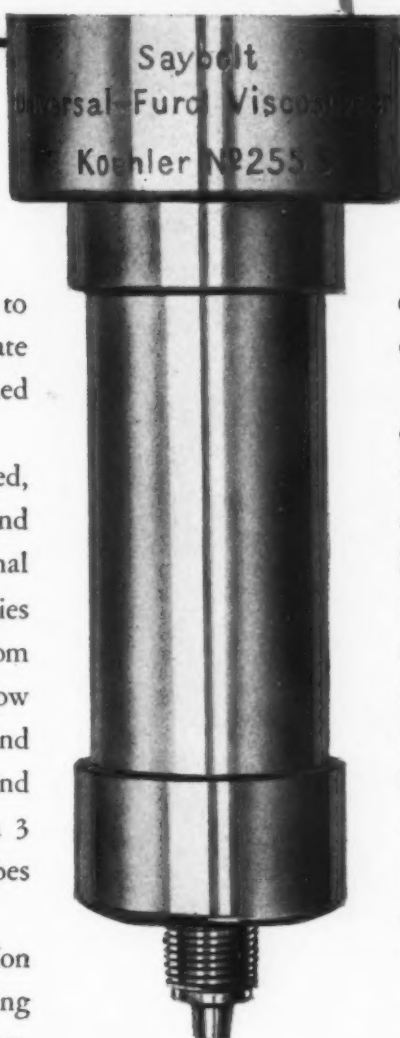
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Even measure a hole by stopwatch?



THIS A.S.T.M. viscosity tube, used to test oil, has an opening so accurate to size its final dimension is determined by stopwatch.

The nozzle is machined and drilled, then hardened; the hole itself is ground and honed to a tolerance of .0001". Final sizing, however, is made during a series of time trials—in which the oil flow from the tube on test is timed against the flow from a master tube. The hole is hand lapped after each trial—lapped and timed again and again—until, in a 3 minute standard flow test, the tubes match within 4/10 of a second.

Cost of making this super-precision instrument comes high—a "reject" during the finishing stages means serious loss. Hours of skilled labor might be wasted

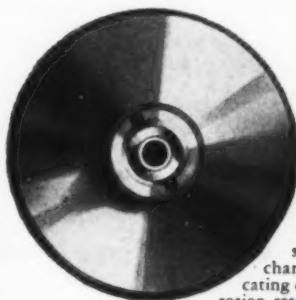
on material later found defective—while costs soar.

Frasse stainless steels have been successfully used in this rigid application for 8 years. If you like quality in your stainless, you'll find it in Frasse warehouse stock. As for variety, you're invited to be choosy. Frasse stocks stainless in every rolled form . . . in 7 different bar types alone—and in a wide range of sheets, strip, tubes, pipe and specialties. Call us. *Peter A. Frasse and Co., Inc.*, 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissahickon Avenue, Philadelphia 29, Pa. (Baldwin 9-9900) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • Jersey City • Syracuse • Hartford • Rochester • Baltimore.

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give you
THE BEST FOR YOUR PURPOSE



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Gray Iron, plain or alloyed

• In this completely equipped experimental foundry you can get impartial experience-based recommendations as to which of these three types of metals will serve you best for your cast parts. It is one building of a group at Mahwah, N. J., the national research headquarters of American Brake Shoe Company.

Whichever metal proves best for you, Brake Shoe foundry techniques can benefit you in both pilot and production foundries at Mahwah, N. J., and in the company's production foundries at Melrose Park, Ill., and Baltimore, Md.

At these plants, castings can be made in widely-used types (light, medium or heavy weight, green or dry sand or all core assemblies) including intricate and special types. Write us about your needs; let us tell you what we at Brake Shoe can do to meet them.

6205

AMERICAN
Brake Shoe
COMPANY

**BRAKE SHOE AND
CASTINGS DIVISION**

230 PARK AVENUE, NEW YORK 17, N. Y.

(Continued from page 184)

Although still used primarily as gasketing material, G-E silicone rubber is finding increased use in many industries where its heat-resistance and its chemical and moisture resistance offer many advantages over other materials. The fact that it will not adhere to metals or other materials at high temperatures is an important feature of the material.

One new interesting application for G-E silicone rubber is as a gasket in chemical reactors where the material withstands temperatures as high as 400°F and maintains its original characteristics under high vacuum. The silicone provides excellent resistance to alcohol, phenol, and other solvents, and is particularly effective because of the absence of a plasticizer in the silicone rubber stock. Use of the material in chemical reactors used in the manufacture of G-E Glyptal alkyd resins has demonstrated that the gasket will not harden or crack under the severe conditions to which it is subjected in this application. It further eliminates replacement problems often encountered with natural rubber gaskets.



Sealer bars for bag making machine, endure temperatures 300-400° F. The rubber is cemented to metal bars by special adhesive for silicone rubber.

Another large use for the silicone gaskets is in jet engines where molded O-rings seal two main parts of the engine against air and oil vapors. Fifteen inches in diameter, these gaskets are continuously subjected to temperatures between 350° and 400°F and remain soft and resilient without swelling or deterioration to provide good gasketing action with excellent compression set.

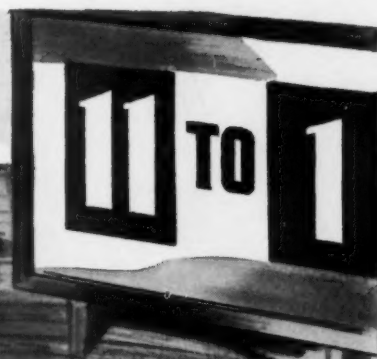
Silicone rubber's non-adherence to metals even under severe service conditions has made the material particularly suitable as valve seats in various types of relief valves for domestic hot water tanks. For this application, the silicone replaced conventional rubber gaskets because they did not stick to a metal collar during hot dry storage and at high operating temperatures.

Do Not Harden

In high vacuum systems, G-E engineers said that silicone rubber gaskets do not harden and crack due to the escape of volatile plasticizing components at elevated temperatures because of the absence of any plasticizing oils in the formulations. The fact that they maintain uniform surface hardness and flexibility over a wide range of temperatures is important as well as the fact that there is a minimum of breakage of glass equipment occurring from expansion and contraction when silicone rubber is used between glass and

(Please turn to page 188)

IT'S HARPER



11 REASONS FOR USING HARPER EVERLASTING FASTENINGS

- | | |
|---------------------------------------|--------------------------|
| 1 RESISTANCE TO
RUST AND CORROSION | 6 ATTRACTIVE APPEARANCE |
| 2 RESISTANCE TO
HIGH TEMPERATURES | 7 EASY TO CLEAN |
| 3 NON-MAGNETIC | 8 HIGH STRENGTH |
| 4 NON-SPARKING | 9 LONG LIFE |
| 5 RE-USEABLE | 10 LOWER ULTIMATE COST |
| | 11 RESISTANCE TO FATIGUE |



Only 1 for Common Steel—LOWER FIRST COST

—An amazing combination of advantages in favor of non-ferrous and stainless steel bolt and nut products.

PROMPT SHIPMENT FROM STOCK . . . Harper maintains stocks of over 5,000 individual items in Chicago and New York . . . large quantities of each. Others being added constantly. Specials made to order from ample stocks of raw materials.

Write for Catalog

THE H. M. HARPER COMPANY
MORTON GROVE, ILLINOIS
(SUBURB OF CHICAGO)
NEW YORK 13 • 200 HUDSON STREET

BRANCH OFFICES: Atlanta, Cambridge, Cincinnati, Cleveland, Dallas, Denver, Detroit, Grand Rapids, Los Angeles, Milwaukee, Philadelphia, St. Louis, San Francisco, Seattle, Toronto (Canada)

HARPER

Briggs & Stratton Engines— America's Choice for Thirty Years

For 30 years Briggs & Stratton 4-cycle air-cooled engines have proven their value, performance, and dependability under the most exacting conditions.

Users, manufacturers, and dealers *know* that equipment powered with these engines is powered **RIGHT**.

This public confidence has resulted from the engineering leadership, unending research, and the skill of Briggs & Stratton workmen—all directed at making the world's finest single cylinder, 4-cycle gasoline engines.

BRIGGS & STRATTON CORPORATION
Milwaukee 1, Wisconsin, U. S. A.



(Continued from page 186)

metal at high temperatures. For this application, the silicone product also gives good protection against leakage because stocks do not harden and less pressure is necessary with the softer stocks to obtain a good seal.

Another novel use of silicone rubber is as a press pad in heat sealing equipment where it stands continued exposure at 300-350°F with no noticeable change in flexibility or surface hardness and will not adhere to plastics, glass, cloth, metal and other materials used in packaging.

For high temperature baking ovens, silicone rubber gaskets minimize entry of air or leakage of hot air because of the uniformity of the material at varying temperatures; minimize the necessity for close tolerances to be held on the doors of large ovens because of the soft stocks available. The non-adhering properties of the silicone



Silicone bouncing putty is used in new U. S. Royal golf ball.

also is advantageous for this use because a door gasket would not stick to the oven and tear when the door was opened.

G-E silicone rubber is available in extruded shapes, molded parts, sheet stock or fabricated stocks. Extruded rubber is available in rods, tubes, flat strips or a large variety of desired shapes for which a die may be formed. Sheet stock is available in thicknesses from 1/32 in. to 3/4 in. and also may be reinforced with plies of glass and asbestos cloth to give greater strength. Molded parts can be made in any of the conventional types of compression molds and are now being produced in increasingly intricate shapes.

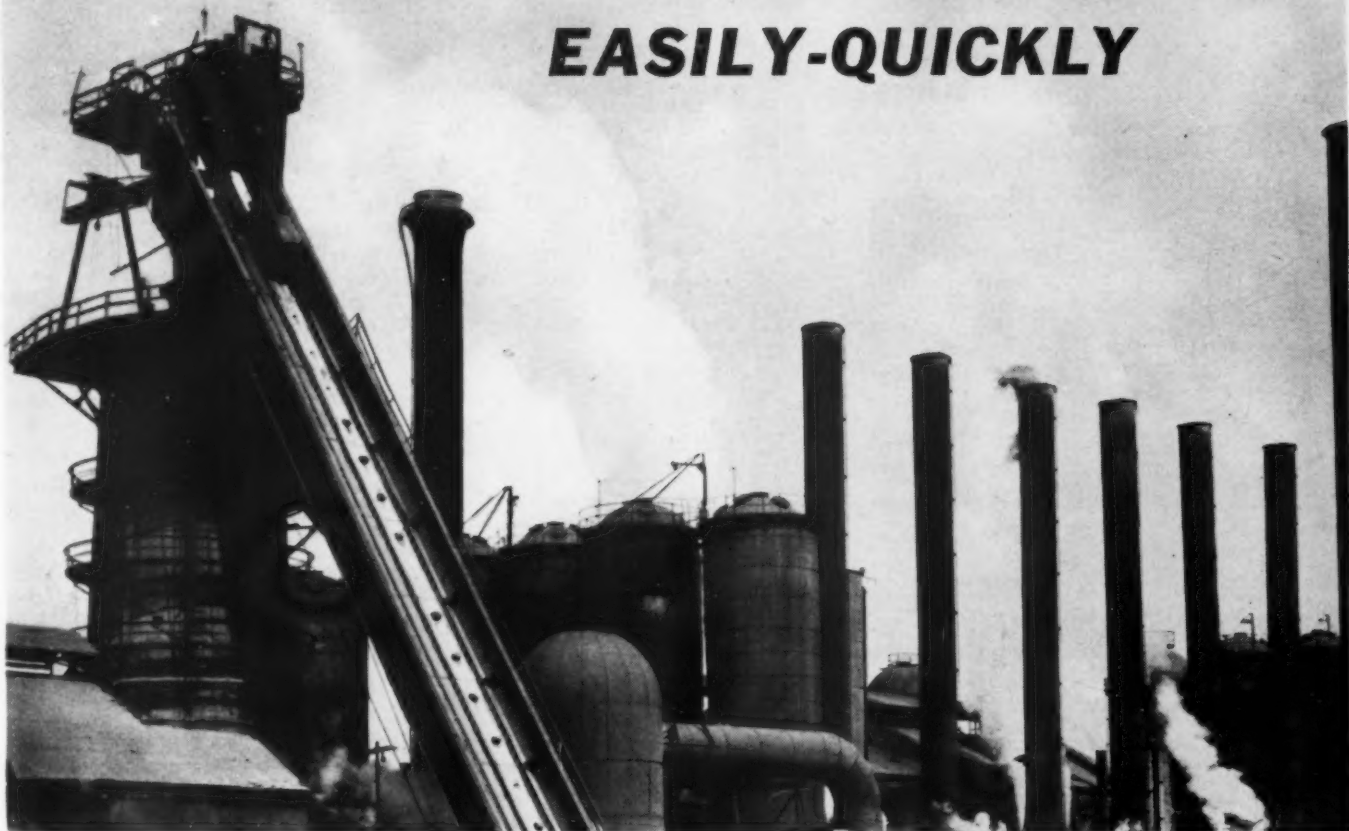
HIGH-TENSION FABRIC CONVEYOR BELT

A new high-tension fabric conveyor belt for jobs where belt tensions run as high as 1,000 lbs. per inch of width has been announced by the Hewitt Rubber Division, Hewitt-Robins, Inc., Buffalo, N. Y. The strength material consists of a combination of rayon and nylon, which is said to offer greater strength than the standard types of cotton woven fabrics or cotton cord belts. The woven fabric is called Raynile, because of the combination of rayon and nylon.

Important features of the belt include maximum tensions almost double that offered by 48-ounce cotton fabric; excellent transverse flexibility, assured by the nylon threads; minimum stretch in actual operation, and field splicing made easy because of fabric construction.

(Please turn to page 190)

NOW: MEASURE FIRE POWER EASILY-QUICKLY



REMARKABLE CITIES SERVICE "HEAT PROVER" SERVICE



FREE: A new booklet entitled "CONTROL OF COMBUSTION FOR INDUSTRY." Write Cities Service Oil Co. Room 260 Sixty Wall Tower, New York 5, N. Y.



Paves the Way for Greater Production by Scientifically Measuring the Exact Performance of Any Fuel in Any Type of Heating Operation

Nearly every industry can profit greatly from this amazing new industrial service. The versatile Heat Prover developed in the laboratories of Cities Service can tell you quickly and accurately what percentage of the fuel you burn is converted into productive energy.

Regardless of the type of furnace the Heat Prover will tell how much fuel you need to gain maximum productive efficiency. It tells how much is wasted. How much can be saved. How to correct the loss.

At absolutely no obligation to you a Cities Service Combustion Engineer will come in and measure the combustion efficiency of your plant. Why not set up an appointment today.

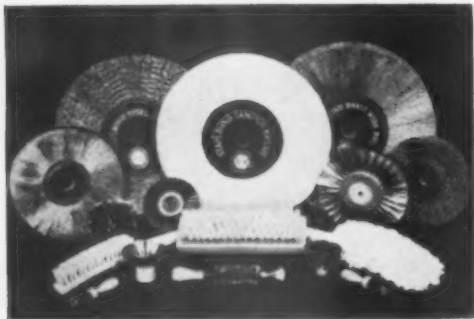
CITIES  SERVICE
QUALITY PETROLEUM PRODUCTS

brush
your coat

mister?



Hold it Harry! Put down that broom. For best results use a clothes brush. And for best results in metal finishing applications use the brush that's designed and made to do the job right. You'll find it in H-VW-M's complete line.



For full information on H-VW-M Stapl-bond and general brush line, send for Bulletin BR-103.

HANSON-VAN WINKLE-MUNNING COMPANY

MATAWAN, NEW JERSEY

Manufacturers of a complete line of electroplating and polishing equipment and supplies

4029

Plants: Matawan, New Jersey • Anderson, Indiana

Sales Offices: Anderson • Chicago • Cleveland • Dayton • Detroit • Grand Rapids • Matawan • Milwaukee • New Haven • New York • Philadelphia • Pittsburgh • Rochester • Springfield (Mass.) • Stratford (Conn.) • Utica

H-VW-M's line of three Stapl-bond brushes—Steel Wire, Tampico and Brass Wire—are light centered . . . put less load on spindles . . . give better wheel balance . . . don't shed because wire staples hold strands tight to hub. Specially treated Tampico assures extra fiber stiffness . . . longer wear . . . better conveyance of composition.

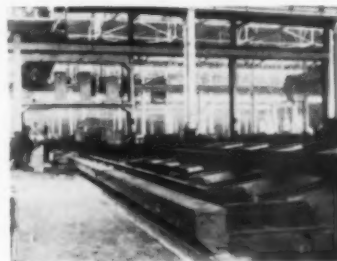
H-VW-M's complete, general brush line is also manufactured to the highest quality. Get the advice and recommendations of our skilled craftsmen in selecting the brushes to do the job right.

HIGH SPEED FRICTION SAWS IN U. S. STEEL WAREHOUSES

The first of several new high-speed friction saws to be installed in various warehouses of United States Steel Supply Company was placed in operation in the United State Steel Corporation's Chicago warehouse recently. Capable of making clean square cuts across heavy sections, such as structural shapes, the new saw eliminates the excessive burring which characterized former types of cutting equipment and required much time and labor to remove burred, rough edges.

This new saw is regarded as the most modern of its type in the steel warehousing industry. It features remotely controlled, electrically operated feed and take-off rolls which facilitate handling of the material to be cut.

A hydraulic system controls the forward and reverse position. The maximum forward speed when making a cut is 13 feet per minute. After the cut is completed, the saw returns to its starting position at a speed of 51 feet per minute.



Overall view of new, high speed cutting friction saw.

The saw blade is a steel disc, 60 inches in diameter and 7/16-inch thick, with a serrated edge. It revolves at a speed of 1,750 revolutions per minute, which makes the peripheral speed approximately 320 miles per hour. When the rapidly rotating blade makes contact with the material to be cut, friction generates heat faster than the material being cut can absorb it. The intense heat melts the surface of the material, which is then carried away by the teeth of the blade. The melting and scraping action continues throughout the cut.

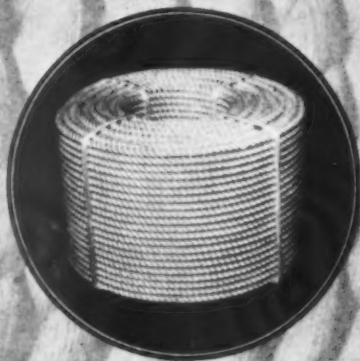
The revolving blade generates as much heat as it imparts to the material; but because of the high ratio of the arc of cooling to the arc of heating, the time that it is in contact with the material is far exceeded by the time it is exposed to the cooling action of air and water. This prevents the blade from reaching an excessive temperature and prolongs its life.

ANNOUNCE TWO LINES OF HEAT SEAL PAPERS

Pervenac and I-Mac are the names of two lines of heat seal papers, announced by the Nashua Gummed and Coated Paper Co., Nashua, N. H. The former is a delayed action, tack-retaining type of heat seal paper which can be activated by heat and then applied independently of heat to wet glass, film, tin, wood, corrugated board, enamelware, and other hard to label surfaces. I-Mac is the direct heat and pressure type of heat seal paper which is ac-

(Please turn to page 194)

WHITLOCK
for
Ropeconomy



WHITLOCK CORDAGE COMPANY

46 South Street

New York

NEW THREADWELL GAGE LINE

ECONOMY AND SATISFACTION GUARANTEED =



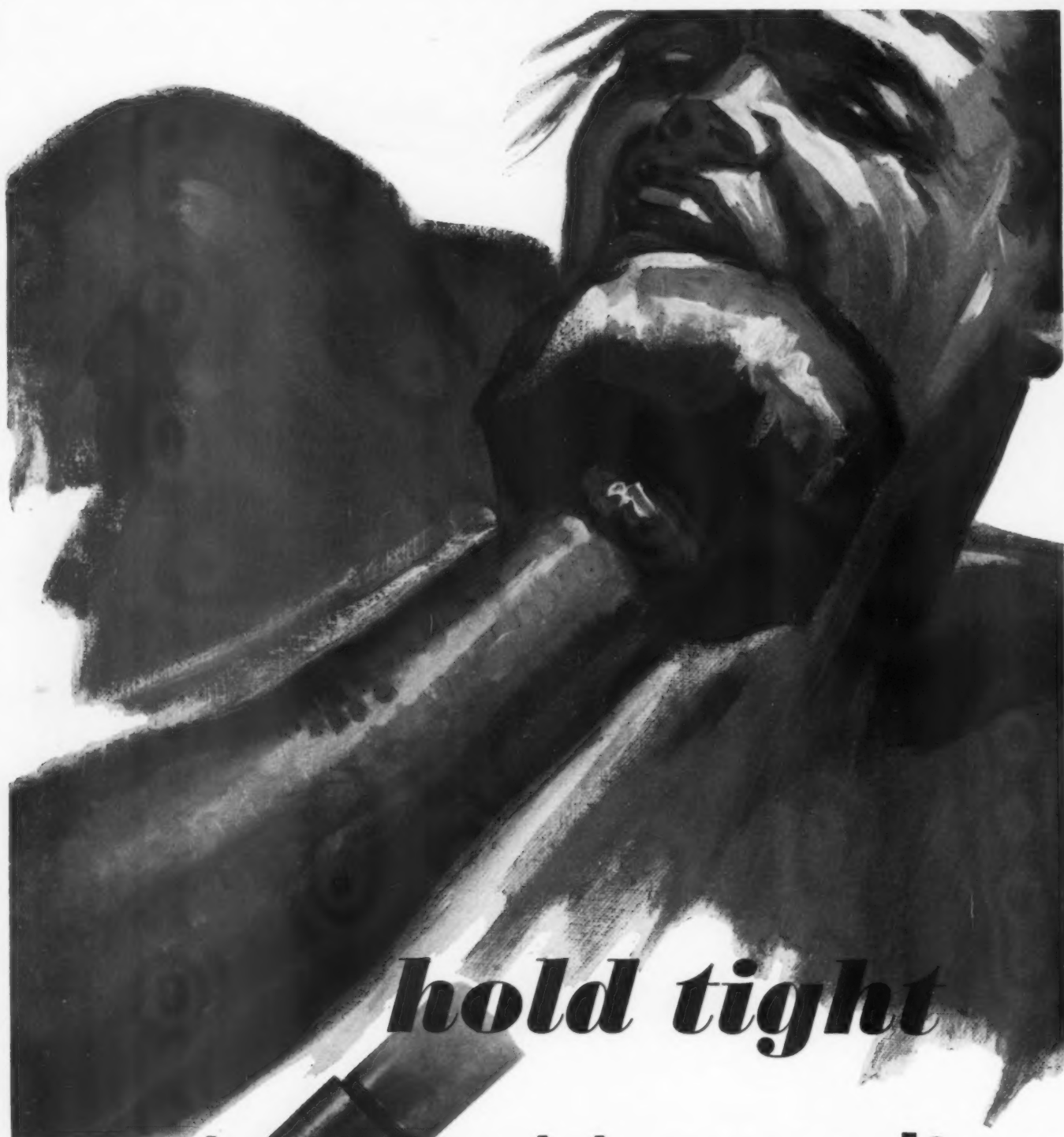
Threadwell Gages are now
available to industry thru
Threadwell Authorized Distributors.
For Catalog and name of nearest
Threadwell Distributor, write to
Threadwell Tap and Die Company,
Greenfield, Massachusetts.

Threadwell

"TOOLS OF DISTINCTION"

THREADWELL TAP AND DIE COMPANY

Makers of Threadwell Taps, Dies, Counterbores, Twist Drills, Keyway
Broaches, Self-Oiling Pipe Threader and other fine cutting tools.



hold tight
with **precision couplings**

WHEATLAND STEEL PRODUCTS COMPANY,
Bankers Securities Bldg., Philadelphia 7, Pa.

Yes, Gentlemen:

I'll hold tight on buying black and galvanized Steel
couplings until I receive the colorful new Wheatland price
list. Please send it to me at once.

Name _____

Address _____

City _____ State _____

by **Wheatland**
STEEL PRODUCTS
C O M P A N Y

Bankers Securities Building Juniper & Walnut Streets • Phila. 7, Pa.

HINES SHELF

A NAME TO REMEMBER
WHEN YOU BUY



Shelving

FOR LIBRARIES—STOREROOMS AND OFFICES

Schools and universities are finding that these strong, prefabricated shelving units meet the needs for additional book stacks at large savings in money. Made with a framework of clear Ponderosa Pine, fastened together with a patented, cadmium plated hardware bracket and with Masonite Temperd Presdwood to serve as shelves and ends, Hines-Shelves can be erected by unskilled labor. Everything comes to you, carton packed, ready for quick, easy assembly and the framework can be painted or stained to harmonize with any color scheme.

EDWARD HINES LUMBER CO.
2431 SO. WOLCOTT AVE., CHICAGO 8, ILLINOIS

IMMEDIATE DELIVERY—Standard starter and extension units measure 34 in. high, 36 in. wide, 11½ in. deep with 3 shelves; 36 in. by 11½ in. are ready for immediate delivery. Where quantities are large, special sizes will be made to order.

EDWARD HINES LUMBER CO.
2431 SO. WOLCOTT AVE., CHICAGO 8, ILLINOIS

Please send us name of nearest distributor and full information on Hines-Shelves.

Name.....

Address.....

City.....State.....

GENERAL ELECTRIC

Water Coolers

... GIVE PLENTY OF COOL WATER



No waiting for cool water when you install General Electric Water Coolers. Just touch your toe to the foot pedal... and get plenty of cool water from the large stainless steel reservoir.



... ARE BUILT TO LAST

The welded, heavy gauge steel cabinet stands up under constant factory vibration. It's treated *after* fabrication for greater rust resistance. The G-E Water Cooler costs only a few cents a day to operate thanks to the economy features of the G-E Condensing Unit...the non-clogging counterflow pre-cooling system...the effective sealed-in steel insulation. Ask your G-E Dealer for full information. *General Electric Co., Air Conditioning Dept., Section W82911, Bloomfield, N. J.*

Look for these G-E Super Features

1. **Easily adjusted temperature control.** No tools, no serviceman needed.
2. **Stainless steel evaporator**... Rust-resisting cabinet. Protection against corrosion.
3. **Welded, heavy gauge steel cabinet.** Stands up under factory vibration.
4. **G-E Condensing Unit.** Economical, dependable operation. Long life, high volumetric efficiency.
5. **Foot pedal control.** Simple sanitary operation. Correct drinking height.



GENERAL ELECTRIC

Water Coolers

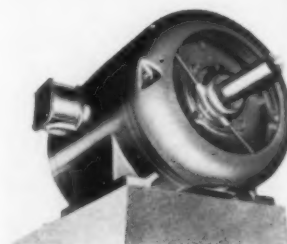
(Continued from page 19.)

tivated and applied simultaneously by heat and pressure. It can be applied to a wide variety of surfaces such as foil, waxed paper, cellophane, pliofilm, glassine, Kraft, stainless steel, chrome, tin, zinc, painted metals, rigid plastics, rubber, glass, wet or dry, cardboard, wood and paper.

Pervinac is available in two types, CM-1 and BM-1, and I-Mac in two types, PGM and PA, for specific uses and functions. These papers were formerly known as Thermo-Kote and Thermo-Stix, respectively. The papers are tinted for ready identification of their respective uses.

1 1 1

WAGNER BUILDS NEW EXPLOSION-PROOF MOTOR



The Wagner Electric Corporation, St. Louis, Mo., announces that it is now building totally enclosed fan-cooled motors in the 736 frame size, in ratings of 200 hp at speeds of 3500, 1570, 1160, or 870 rpm, 550 volts or less, and 150 hp at the same speeds for operation on 2300 volts. The motors are approved by the Underwriters' Laboratories for Class I Group D and Class II Groups E, F and G hazardous locations.

1 1 1

NEW BOOK SHOWS WAYS TO CUT PACKING COSTS

A completely new edition of its Speed Packing Manual is now ready for distribution to shippers, according to an announcement by Sherman Paper Products Corporation. The current edition is the sixth revision of the book. 199 step-by-step photographs and drawings are used to illustrate detailed instructions for packing a wide variety of products, from clothing and jewelry to automobile parts and pre-fabricated houses. It is claimed that the new packaging ideas outlined in the book can save shippers up to 60% in packing costs.

Of special interest to manufacturers and shippers of highly-finished metal products is a section on corrosion prevention, based on wartime packing experiences. Included in this section are detailed descriptions of the methods required for products supplied to the armed forces.

Copies of the manual may be obtained without cost by writing to Sherman Paper Products Corporation, Newton Upper Falls 64, Massachusetts.

See Purchasing
Classified Section
Page 358



"Tubing?...Yes, I know where we can get it

"In *our* business we can't afford to get caught short. Constant market changes, unstable conditions, and our large volume requirements compel us to keep tab on a lot of suppliers—both actual and potential.

"So when the Chief asked about tubing, I was able to pop right back, 'Sure, I know where we can get it.' I knew that we could send steel to Nikoh and get quick service on the big quantities of tubing we need."



for welded steel tubing, pipe, conduit

NIKOH TUBE COMPANY • 5001 South Kedzie Ave., Chicago 32, Ill.

Who needs tubing?



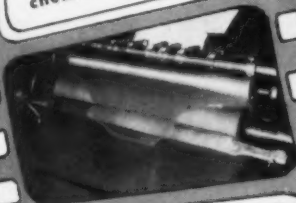
1. Electrical Industry
2. Process Industries
3. Furniture & Fixtures
4. Toys & wheel goods
5. Heating, ventilating, air conditioning
6. Machinery, metalworking
7. Railroad, marine
8. Refrigeration
9. Petroleum
10. Automotive, aviation

Nikoh has plant capacity available for fabricating welded steel tubing ($\frac{1}{2}$ " to 4" OD), pipe ($\frac{3}{4}$ " to 6" ID), and conduit ($\frac{1}{2}$ " to 2"). Formed and welded with efficient new equipment that assures uniform quality, accuracy to specifications, prompt shipments, and moderate price. Consult Nikoh on your problems of engineering and production.

NIKOH TUBE COMPANY 5001 S. KEDZIE AVE., CHICAGO 32, ILL

Paisley
SCIENTIFIC
ADHESIVE SERVICE

EP3
One of the largest manufacturers in its industry with a historical background of adhesive and starch chemistry since 1851.



EP3
Foamless, clean-running, quick-tack Paisley Tightwrap Glue at work in a set-up box plant.



EP3
Fast automatic package wrapping is made possible with Paisley Bundling Adhesive.



EP3
Use Paisley Bottle Labeling Adhesives for all makes of semi or fully automatic labeling machines.



EP3
Quick-setting Paisley Case Sealing Glue featured in hand brushing operation.

IF IT'S AN ADHESIVE PROBLEM . . .

"PUT IT UP TO

Paisley"

OVER 400 different raw materials and chemicals are used in compounding Adhesive Products, the combinations running into hundreds of thousands of different formulas and variations. The PAISLEY Laboratories are continually perfecting new products or improving existing ones to meet the ever changing requirements of industry.

Many concerns, large and small, national and local, in all fields of endeavor, have found that it pays to know what's going on in Adhesive research—what's new and productive, and most efficient for every labeling, sealing and fabricating operation. They have found extra profits, through production speed-up; lower costs by utilizing PAISLEY Scientific Adhesive Service to obtain the one correct glue, paste or cement to meet the individual operation under study. Large and small users of Adhesives can enjoy the benefits of PAISLEY Scientific Adhesive Service as shipments range from gallon containers to large 55 gallon drums and carlot quantities. When you have an operation requiring Adhesives "Put it up to PAISLEY"!

EP3
Automatic top and bottom carton sealer applying Paisley ready-for-use Carton Sealing Glue.



EP3
Adhesive machine applications are efficient, economical with Paisley Adhesives (showing edge gumming machine.)



EP3
Paisley Lap Belt Pastes operate more efficiently in all can labeling machines.



Send for
THIS ADHESIVE
OPERATION
DATA SHEET

EP3
Here's your guide to getting the ONE best, most efficient adhesive for the operation you describe.

PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements, and Related Chemical Products

1770 CANALPORT AVE., CHICAGO 16, ILL. ★ 630 W. 51st STREET, NEW YORK 19, N. Y.

Have you looked into this New, Low-Maintenance Drive?



This new drive saves you maintenance dollars because it protects itself against belt and bearing abuse. Furthermore, it has the capacity, at all times, to transmit the total output of the motor.

Here's how it works.

THE PIVOTED BASE GIVES YOU AUTOMATIC TENSION CONTROL

With the pivoted motor base you can predetermine how much belt tension you'll need to handle peak loads. You set the base; letting a part of the motor weight lean into the belt to give you the proper tension. From then on, the drive automatically maintains that tension despite all variations in load. This eliminates guesswork and keeps belt and bearing wear to a minimum.

THE SCHIEREN DUXBAK BELT PROVIDES SHOCK ABSORBING ABILITY, FULL-FRICTION PULLEY GRIP, LONG LIFE

The Schieren Duxbak belt does its part in this new, low-maintenance drive team by soaking up shock. This high quality belt has a slow, self-adjusting resiliency that protects bearings by cushioning sudden loads.

This belt's live, dynamic grip and pull transmits more power, with less maintenance.

Write for details on this modern short center drive.

SC-32

CHAS. A. SCHIEREN COMPANY

36 FERRY STREET, NEW YORK 7, N. Y.

Tanners and Manufacturers Since 1868

80 Years in Business

Branch Offices in Chicago, Dallas, Denver, Detroit, Newark, New York, Philadelphia, Pittsburgh, Salt Lake City & Toronto, Can.

Leather Belting, Leather Packings, Leather Specialties

PAST, PRESENT AND FUTURE OF LIGHTING DRAMATIZED IN WESTINGHOUSE STAGE SHOW

"Look To Light", a dramatic 90-minute stage show played by a professional cast, that tells in novel fashion the story of lighting in the past, present and future, is now on a coast-to-coast tour which includes 33 major cities. The show was produced by the Lighting and Lamp Divisions of the Westinghouse Electric Corporation, and marks one of the first efforts by industry to bring its story of science and engineering to the public by means of stage drama.

Narrator and veteran actor Noel Leslie begins the show with an explanation and visual presentation of the sun's spectrum, source of all natural light and color. He goes from there to weld together the dramatic scenes which emphasize what man's modern lighting techniques can accomplish. While revealing the latest marvels of man-made lighting, the show also points up many amazing deficiencies and calls for corrective action.



In this scene, a man has been injured and production is off because of poor lighting.

One of the most powerful sketches is the factory drama. The plant superintendent whose requests for better factory lighting have been turned down finds himself confronted first with ineffective production and then with an injury to one of his veteran workmen. Threatening to resign, he brings the matter to a head and succeeds in getting top management to install modern factory lighting. As a result, production is boosted, injuries eliminated and the morale of the entire work force greatly improved.

Other scenes in "Look to Light" include one showing how little improvement has been made in schoolroom lighting over that in use a hundred years ago, and the costliness of such "economy"; the crime and accident stories which spring from poor street lighting and how the latest equipment and techniques provide effective remedies; the story of how lighting science is making aviation safer and more dependable; and how today's sport and flood-lighting provides healthful recreation for youngsters and keeps them off the streets.

DOUGLAS FIR PLYWOOD COMMERCIAL STANDARD

Commercial Standard CS45-48, Douglas Fir Plywood, is announced by the Commodity Standards Division, National Bureau of Standards, Washington, D. C. The new standard is as of November 1, 1948. Printed copies of the standard will be available in about two months.

(Please turn to page 202)

SAVE

- MATERIALS
- MAN-HOURS
- MONEY

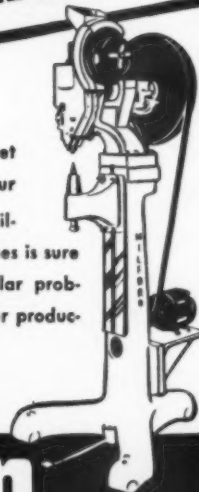
with the . . .

RIGHT RIVETS

Select exactly the right semi-tubular, split rivet, or cold-headed fastener from Milford's complete line. You'll find it pays in every way!

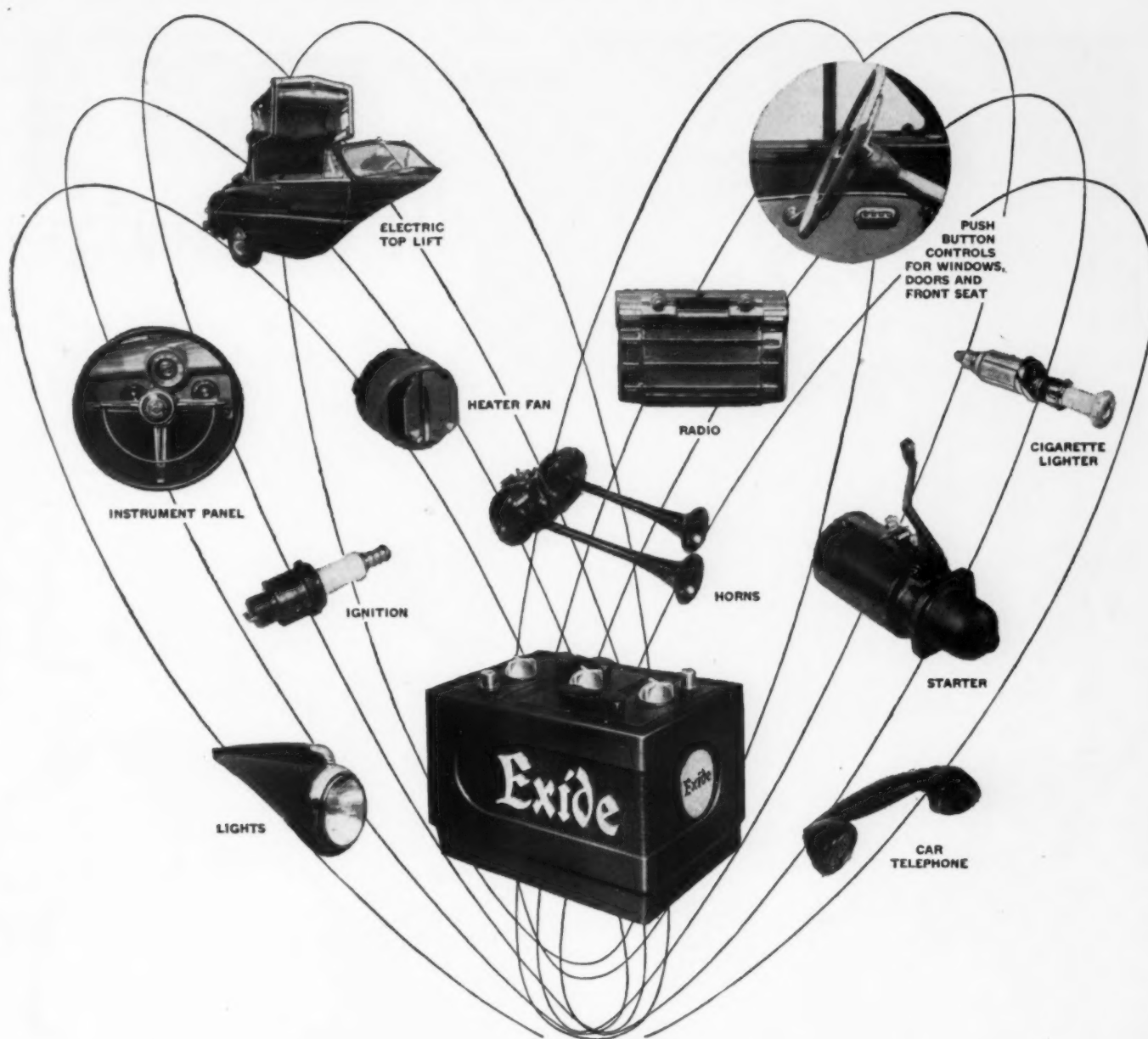
RIGHT MACHINE

Then use the right rivet setting machine for your application. One of Milford's 15 basic machines is sure to solve your particular problem . . . and slash your production costs!



PENN RIVET & MACHINE COMPANY

254 Huntingdon Street
PHILADELPHIA 33, PENN.



Electrical Heart...



The electrical heart of your automobile is the battery, that inconspicuous unit of concentrated power with so many jobs to do. It is busier than ever in the newer cars, for many of their added features are electrical. Thus there is a call for extra battery power, greater dependability and longer life... qualities you can always count on when your battery is an Exide.

Not only do Exide Batteries meet all the demands of automotive

service, but they give equally trustworthy performance in numerous other fields. *For there are Exide Batteries for every storage battery need.*

In railroad service Exide Batteries are used for car lighting, air-conditioning, signal systems and Diesel

locomotive cranking. They provide motive power for battery electric trucks, mine locomotives and shuttle-cars. Exide Batteries are used by telephone and telegraph companies, radio and television stations... in ocean vessels and aircraft... plus many other applications. And in millions of cars, trucks and buses, they give daily proof that "When it's an Exide, you start."

Exide[®]

BATTERIES

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

1888 . . . Dependable Batteries for 60 Years . . . 1948

THE TIGER BRAND SPECIALIST SAYS —

"If your wire



rope takes a beating like this, you ought to check the application"

"The foreman on this job was blowing his top. He was already behind in production when this machine went down. He swore that the wire rope was no good.

"We took a look at the sheaves. They were badly worn. Then I asked him, 'When did you check those grooves?' Nobody on the job could remember when the sheaves had been regrooved.

"We got out a gage. Sure enough, that's where the trouble was. The grooves had worn down so that the proper size gage nowhere near bottomed. Now they're regrooving and I sold him on the idea of letting me check all his equipment. I'll bet we keep his business and his ropes will give twice the service."

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Are you sure you have the RIGHT wire rope for your job!

Are you convinced beyond a doubt that your wire ropes are operating at the lowest obtainable unit cost?

Are you sure that your equipment is contributing fully to long, safe rope life?

If not, you should have a check-up by a TIGER BRAND Specialist—a thoroughly experienced field service engineer.

To show you how the proper application of wire rope can save you money, we have prepared a new booklet to help you check your own operating conditions.

SEND FOR NEW FREE BOOKLET



American Steel & Wire Company
Rockefeller Building, Dept. G-11
Cleveland 13, Ohio

Gentlemen:

Please send me a copy of your booklet, "Valuable Facts about the use and care of Wire Rope."

Name.....

Company.....

Position.....

Address.....



AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

LARGE INDUSTRIAL GEARS



Bevel and mitre gears up to 60" dia. are cut on gear planers to accurate tolerances.

CUSTOM MADE GEARS up to 145" diameter

You can save time, money and errors in your large and heavy industrial gear requirements with the prompt, custom service of SIMONDS GEAR. Within easy shipping distance of many heavy industry plants—with a personalized attention to your specific gear requirements—SIMONDS GEAR is able to assure you fast, accurate gear service for all heavier gear needs. Size range includes: Spur Gears up to 145"—Bevel and Mitre Gears up to 60"—Worm Gears up to 72"—also worms, worm gears, racks and pinions. Materials include: cast or forged steel, gray iron, bronze, silent steel, rawhide and bakelite. Place your next heavy gear inquiry with SIMONDS GEAR and test the difference!



Stock carrying distributors for Ramsey Silent Chain Drives and Couplings, V-Belts.

THE
SIMONDS
GEAR & MFG. CO.
LIBERTY at 25th • PITTSBURGH 22, PA.

COMMERCIAL STANDARD HOT ROLLED RAIL STEEL BARS

Commercial Standard CS150-48, Hot Rolled Rail Steel Bars, effective October 20, 1948, is announced by the Commodity Standards Division, National Bureau of Standards, Washington, D. C. Copies are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 10¢ each (stamps not accepted). A discount of 25% will be allowed on orders for 100 or more copies.

1 1 1

SHIPPING CRATES AND BOXES REQUIRE ADEQUATE PROTECTION

"A shocking waste" is how one shipping container expert describes careless and thoughtless storage of wooden shipping containers before use. He deplored the practice by some shippers of stacking containers on the ground in the open weather.

"There's gold in them there stock piles of wooden shipping containers," said Leonard C. Hintze of Chicago, representative of industrial shipping container manufacturers.

When it is necessary to stockpile wooden containers out of doors, he asserted, dunnage should be provided to keep them off the ground and they should be covered with tarpaulins to protect them against the ravages of weather.

Taking a hypothetical stove manufacturing company as an example, Hintze said:

"The company will spend much time, effort, and money to develop a superior stove that fully meets underwriters' approval. The stoves or ranges are studiously and scientifically designed and carefully made so the manufacturer is proud of them. They undergo rigid inspection. When they enter the shipping room, they are given a final inspection, a touchup, and a polishing to give them 'eye appeal.'

"The last step before shipping is crating—and there is where waste and carelessness too often enter in. The shipping container should be considered and treated as a 'silent salesman' designed and made to enhance the saleability of the product.

"Crates manufactured and used with 15 percent moisture content have a relative strength of 100 percent. Crates assembled on the production line while wet may easily lose considerable of their original toughness and resistance to rough handling after they dry out in the warehouse.

"Shipping crates and boxes given proper protective storage before use will speed up the assembly and packaging procedure, provide greater serviceability and reliability, and present the manufactured product in an eye-appealing package that helps break down sales resistance.

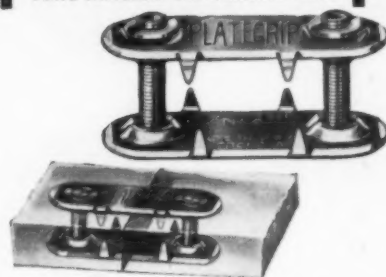
"On the other hand, containers that have been weather-beaten often show corrosion, warping, distortion, mold, soiling, and rust. They are hard to handle in assembling and packing and lack the necessary stamina and strength to provide full protection to contents. They also present an unsightly appearance.

"The wise shipper will bear in mind that 'There's gold in them there stock piles of wooden shipping containers.'

(Please turn to page 204)

PLATEGRIP

PLATE FASTENERS FOR CONVEYOR BELTS



Make strong dust-tight, water-tight joints in belts of any width. Special design spreads tension uniformly across belt, allow natural troughing of belt and assures smooth operation over flat, crowned or take-up pulleys. Sizes for belts of from 1/4" to 1 1/2" thickness. Write for Catalog Sheet.



Also repair plates for mending belts.

ARMSTRONG BRAY & CO.
5368 Northwest Highway, CHICAGO 30, U. S. A.

What's New?

HERE'S an easy way for you to keep abreast of NEW developments in materials, equipment, finishes and processes:

Every month you will find listed in the "Ask Purch" Section — Pages 14 to 20, incl., from 75 to 100 new pieces of manufacturers' literature.

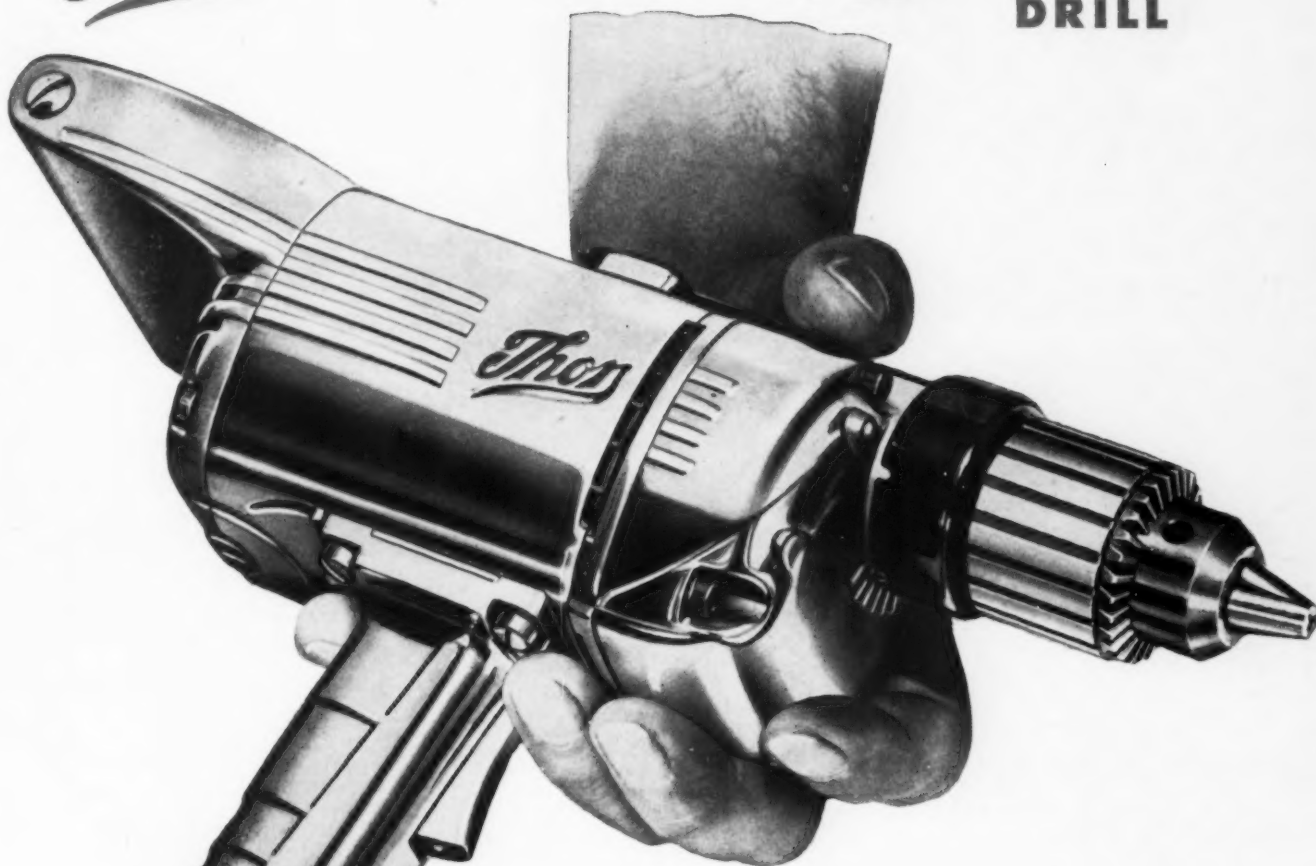
TAKE your selection of the literature of interest to you, and which you may need to bring your catalog files up to date.

And, check the numbers on the post-paid postcards on Pages 19 and 20. "Purch" will see that the material is sent to you without cost.

Ask Purch

PURCHASING

Thor ANNOUNCES THE 1/2" *Silver Line*
DRILL



Much Smaller

Much Lighter

Far More POWERFUL!

**The World's Most Advanced
1/2" ELECTRIC DRILL**

INDEPENDENT PNEUMATIC TOOL COMPANY

Aurora, Illinois

Export Division: 330 West 42nd St., New York 18, N.Y.

Birmingham
Los Angeles
Salt Lake City

Boston
Milwaukee
Seattle

Buffalo
Chicago
New York
San Francisco

Cincinnati
Philadelphia
Toronto, Canada

Cleveland

Pittsburgh

Denver

Sao Paulo, Brazil

Detroit

St. Louis

Houston
St. Paul
London, England

Thor

PORTABLE POWER

TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

NOVEMBER, 1948

203



What this Seal of Service Means to You!

SPA subscribers pledge to you the achievements of 33 years of continued and united effort in establishing and maintaining Southern Pine as the world's supreme structural wood. To the architect, engineer, contractor, lumber dealer and consumer, that pledge means:

Adequate, Permanent Supply of dependable Southern Pine

1

SPA subscribers, through sound forest management, backed by fertile timber-growing lands, assure an adequate, permanent supply of Southern Pine.

Proper Manufacture for Southern Pine's countless uses

2

SPA subscribers, through research, are enhancing Southern Pine's superior characteristics by improving quality through progressively better manufacture.

Carefully Supervised Grading to assure quality standards

3

SPA subscribers' production conforms to the industry's established standards, which mean: (a) *Accurate Grading*; (b) *Correct Manufacture*; and (c) *Proper Seasoning* . . . all important to you.

Efficient Distribution for dependable availability

4

SPA subscribers, by location and facilities, are able to serve their respective markets with maximum efficiency and economy.

Accurate Specifications for widest utilization of Southern Pine's superior qualities

5

SPA subscribers stress authentic specifications and provide technical guidance to designers and specifiers to assure the right grade in the right place.

Proper Use for homes, farms, railroads, industrials, etc.

6

SPA subscribers are working effectively with the building professions, lumber dealers and their customers to promote the time-tested advantages of Southern Pine for every one of America's building needs

THESE FREE BOOKS

tell you of the organization and facilities behind this pledge . . . give you a list of dependable suppliers of Southern Pine.

Write for your copies today.



SOUTHERN PINE ASSOCIATION

CANAL BUILDING
NEW ORLEANS 4, LOUISIANA

WOOD PULP IMPORTS SHOW DECREASE

Imports of wood pulp into the United States in August decreased in tonnage for the second consecutive month of 1948, the Department of Commerce announced recently through its Office of International Trade.

Trade reports indicate that, as a result of stepped-up domestic production, consuming mills in this country anticipate an imminent reduction in prices of overseas pulp and possibly a revision of current export taxes on the pulp, it was stated.

Total wood pulp imports showed a 35-percent decrease due to the reduction of imports from the Scandinavian countries which were 69 percent less than in August 1947 and 14 percent under July 1948.

During August 1948 pulp imports from Sweden were 5 percent under July 1948 and down 69 percent from the August 1947 figure. For the same period imports from Finland were down 25 percent and 70 percent. Canada ranked as the principal supplier in both years. Pulp imports from Canada in August 1948 totaled 131,206 tons, an increase of 10,764 tons or 9 percent over August 1947, according to data issued by the Bureau of the Census.

1 1 1

CLOVER SALES MANAGER HONORED FOR SERVICE



George A. Fish, sales manager of the Clover Manufacturing Company, Norwalk, Conn., was honored recently at a gathering of department heads celebrating his 30 years of continuous service with the company. Mr. Fish was presented with a check of \$1,000 in appreciation of his record. He also received an engraved gold wrist watch from his fellow-employees as a memento of the celebration.

Shown in the photograph above are, left to right: George A. Fish; Irving S. Olmstead, auditor; John Bowers; Mark E. Brown; and E. B. Gallaher, president.

1 1 1

COMMERCIAL STANDARD MINERAL WOOL

Commercial Standard 105-48, Mineral Wool—Low Temperature Installations, loose, granulated or felted form, was recently announced by the Commodity Standards Division of the National Bureau of Standards, Washington, D. C. The new standard became effective October 20, 1948. (Please turn to page 206)

Engineered Papers

RIEGEL-MADE TO YOUR SPECIFICATIONS



MAKING KODACHROME READY-MOUNTS from special Riegel paper

Photo courtesy of Eastman Kodak Company

This interesting machine produces Kodak Ready-Mounts for Kodachrome transparencies. Its speedy and efficient operation requires paper that will meet exacting technical standards.

Surprising—the things being done with paper! It's a remarkably versatile and economical material that Riegel knows how to "tailor-make" to your own most exacting requirements. We can either duplicate an existing grade or develop something entirely new.

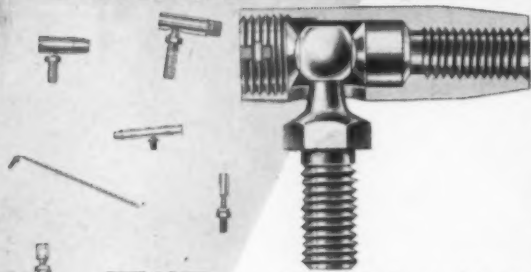
Riegel now produces over 600 papers for industrial leaders in many different fields...beaming, gasket, saturating, greaseproof, shot-shell, button stock, insulating, template...some grades made for hundreds of customers, some for but a single firm. Always consult Riegel first for any special packaging or industrial paper. If we can't make it, we will gladly tell you who can.

Riegel

**Producers of technical
papers for industrial leaders
since 1862**

Riegel Paper Corporation • 342 Madison Avenue, New York 17, N. Y.

Tourek Ball Joints . . .



**PRODUCTION
COSTS DROP
WHEN YOU
ORDER FROM
STOCK . . .**

Tourek's line of ball joints includes 12 standard types in 54 sizes . . . This wide range of selection frequently enables manufacturers to specify an assembly directly from stock to meet exact requirements, thus effecting a saving in production costs and eliminating delivery schedule problems.

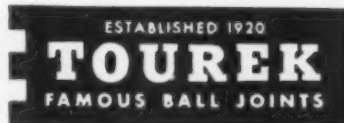
When special ball joint assemblies or precision screw machine products are necessary to meet requirements for new applications, Tourek's designing and manufacturing experience provides a source of valuable assistance.

Write for Tourek's 16-page ball joint catalog—it contains complete specifications on standard types and sizes, as well as data on special types.



**MAKERS OF PRECISION
SCREW MACHINE PRODUCTS**

J. J. TOUREK MFG. CO.
4701 W. 16th Street
Chicago 50, Illinois



NEW ECONOMIES FEATURED IN EXHIBITS AT 18TH NATIONAL POWER SHOW

Components of the modern power plant featuring economy will dominate the most comprehensive display of its kind at the 18th National Exposition of Power and Mechanical Engineering in Grand Central Palace, New York, November 29 to December 4. Universal demands for more and more power are matched only by the efforts of the nearly 400 exhibitors of power plant equipment to convert and apply energy at higher efficiencies. The exposition is the highly efficient clearing house through which power plant progress is advancing.

Exhibits entered in this year's exposition include equipment covering every phase of power production and application from the treatment and combustion of fuels to the ultimate applications of heat and power at the processing unit or production machine. Included are many types of auxiliary and intermediate equipment, as well as those especially designed for the servicing and maintenance of power plants.

In scale, exhibits range from packaged steam generators of 10 to 100 horsepower or more, such as are used in laundries, bakeries, hospitals, restaurants, and many factories, up to apparatus of the largest sizes made for super power plants, such plants being impossible to display as a whole, since they would occupy as much space as does the exposition itself.

Summary of Exhibits:

The general character of the exposition is indicated by a condensed outline of the general catalog, which covers approximately 400 exhibits occupying the entire exhibition space on four floors of the Palace. In scope, the entire field of power generation, distribution and application to specific uses is covered by samples of the objects themselves, scale models and working models. The Summary:

Heat and Power Production—Conveyors, feed pumps, boilers, turbines, stokers, burners, blowers and exhaust fans, boiler tubes, heat exchangers, insulation, refractories, complete steam generating units, ("packaged" boilers), steam turbine pumps and compressors, Diesel engines.

Means of Distribution—Piping, valves, means of control—such as remote and automatic valve operating apparatus, pressure regulators, steam traps, reducing valves, relief valves.

Auxiliaries—Proportionate feeding systems, automatic alarms, cut-offs and other safety appliances, air filtering and smoke precipitation apparatus, liquid level controls.

Instruments—Gauges, flow-meters, thermometers, pyrometers, thermostats; recording and controlling apparatus of many kinds.

Machinery—Variable speed transmissions, pulleys, belts, chain drives, clutches, couplings, universal joints, bearings, gears, speed reducers.

Materials Handling—Hoists, conveyors, skids, lift trucks, power and hand trucks.

Engineering Materials—Standard and special engineering materials, including several new alloys, in cast, drawn, rolled and (Please turn to page 210)

more than

80

**Oakite
Materials
to solve
your cleaning
problems**

... but no price tag

... on Oakite Service, a most valuable Oakite extra. If the Oakite Technical Service Representative has already helped you work out a cleaning problem, you know what we're talking about.

Oakite Service is the practical in-plant application of carefully compounded materials and field-tested methods for all kinds of cleaning. It is a freely available service that puts the chemistry of cleaning to work to help you make better products at less cost.

If you have a descaling, degreasing, paint-stripping, rust-proofing, deodorizing, germicidal, slime-control or other cleaning problem, chances are Oakite Service can help you. Just call in your nearby Oakite Man, or write to Oakite Products, Inc., 54 Thames St., N. Y. 6, N. Y.

OAKITE
REG. U. S. PAT. OFF.

**MATERIALS
METHODS
SERVICE**

Specialized Industrial Cleaning

Technical Service Representatives in Principal Cities of U. S. & Canada

In Modern Automobiles



EATON PERMANENT MOLD GRAY IRON CASTINGS

Where a dense non-porous structure, freedom from leakage under pressure, and high finish are important, Eaton Permanent Mold Gray Iron Castings provide an ideal combination of characteristics. Uniform structure throughout the casting, freedom from growth, ability to take a mirror-like finish, and free machinability have led to the use of millions of Eaton Permanent Mold Gray Iron Castings annually in automobiles and motor trucks. This is equally true in domestic appliances, business machines, and related industries.

Eaton engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product. Send for the illustrated booklet, "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings."

EATON

**MANUFACTURING COMPANY
FOUNDRY DIVISION**

9771 French Road - Detroit 13, Michigan

Foundry Office: Vassar, Michigan

A Vision Becomes a Reality

A Money-saving Reality for Grinding Wheel Users

A RADICALLY NEW and different method of producing vitrified grinding wheels, a method which would not only make them much faster but also much better—such was the vision of George N. Jeppson, chairman of the board of Norton Company. His ideas were turned over to Norton development engineers who set to work to bring them to fulfillment. There were many difficulties at the start, but gradually it became clear that Mr. Jeppson's ideas, as radical as they had first seemed, were basically sound. Grinding wheels were produced experimentally in hours instead of days and with a degree of uniformity that had previously seemed impossible in a vitrified product.



At the dedication of the new plant Mr. Jeppson presents Milton P. Higgins, President, with the ten millionth wheel made by new process

Pilot Plant Success Leads to \$4,300,000 Investment

With the process proved in theory, the next step was to make it work commercially and a pilot plant installation was started for the production of small wheels. Soon this pilot plant was so successful that Norton Company was ready to invest millions of dollars in Mr. Jeppson's idea. Ground was broken in April, 1947 for the construction of

a mammoth new building designed especially to produce wheels by this revolutionary process. The new plant, over 600 feet long and 320 feet wide, with its floor space of nearly five acres, has now been completed and is in production.

Over Ten Million Wheels Already Made

That the new process is a complete success has been definitely proved by the ten million grinding wheels already made by it, first in the pilot plant and for the last few months in the new building. Many customers, especially in the field of internal grinding, have been using the wheels and already have established the soundness of this revolutionary process in grinding wheel manufacture. They have found that the new wheels have perfect balance and perfect uniformity in structure, grade and color—from wheel to wheel and from lot to lot.

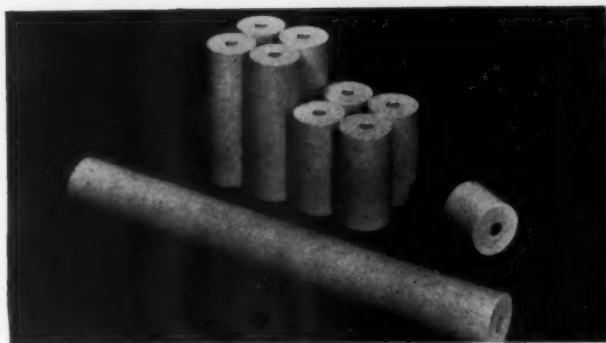
Straight Line Production

The new process lends itself ideally to straight line production and maximum use has been made of this in the new building. Abrasive grain and bond



A view in one corner of the new plant showing the production lines for the finishing operations on mounted points and wheels for internal grinding

are brought into one end of the building and the various production steps take place one after another—including a radically new and continuous electric firing process. Modern conveying equipment has been extensively used so that handling is at a minimum. The building, the largest in the world for producing vitrified grinding wheels, not only houses the newly developed manufacturing equipment but also a cafeteria, hospital, modern locker and washrooms and offices. Over eighty per cent of the wall area is windows and with the monitor roof provides maximum daylight.



32 ALUNDUM wheels, 2 x 2½", made by the new process; dimensional accuracy is shown by evenness with which they stack up, and difficulty of distinguishing line between them

What the New Process Means to Grinding Wheel Users

Precise control is the keynote of the new process—precision mixing, precision molding, precision burning. And precision throughout manufacture means a precision product.

Precise Size

Grinding wheels made by this new Norton process are *dimensionally accurate* within thousandths of an inch—machine readjustments when new wheels are mounted are practically never necessary.

Precise Balance

Because of precision molding and precision burning, *precise balance* is inherent in the wheels—it's there to start with and it stays as the wheels wear down.

Precise Grinding Action

The control methods of the new process have brought a *new uniformity* to grinding action—throughout the life of each individual wheel, from wheel to wheel and from lot to lot. Each new wheel no longer brings a new grinding action and consequent machine adjustments.

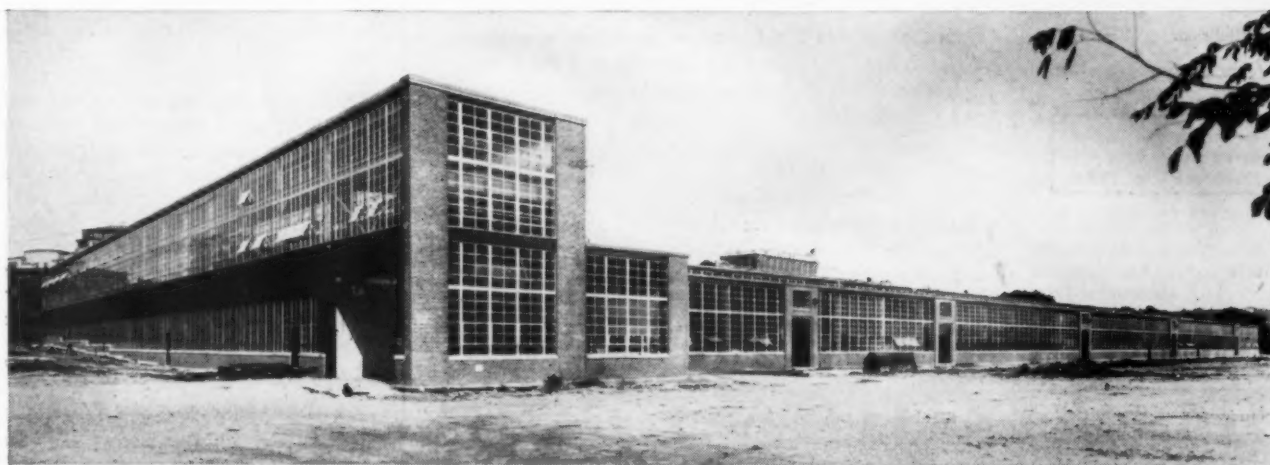
Faster Service

Not only does the new process make wheels *better* but also *faster*. Burning time alone has been cut from a matter of days to hours. And there are the added advantages gained from straight line production. Many customers are already aware of the improved service that has been possible on small wheels through the earlier operation of the pilot plant.

NORTON COMPANY • WORCESTER 6, MASS.

New York Chicago Detroit Cleveland Pittsburgh Philadelphia Hartford Denver Los Angeles

NORTON ABRASIVES



The new Norton building, with a floor space of five acres, for producing vitrified grinding wheels by the new process

Parkers hold everything!

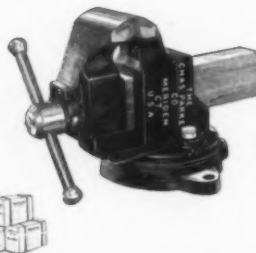
PARKER VISES are expertly designed for durability and to aid skilled hands to faster, better work. Here are Parker facts worth knowing when next you need vises: Swivel base, brake-type locking, to hold the work at any desired position in a 360° circle — entire top of vise covered by renewable steel jaws for years of service — non-pinch tension spring handle.

Coming soon — a great new line of hinged pipe vises and woodworking vises. Parkers are sold through leading distributors only. The Charles Parker Co., Meriden, Conn.

Parkers are unit-packaged — factory new to you.

PARKER VISES

America's First Vise Maker



THEY'RE THE POPULAR



Pat'd and Pats. Pend.



Reg. U. S. Pat. Off.



"Unbrako" Socket Set Screw with Knurled Threads.

Knurling of Socket Screws originated with "Unbrako" in 1934.

SELF-LOCKING SOCKET SET SCREWS ... They're **KNURLED!**

(A) The **KNURLED** cup point of this popular "Unbrako" Socket Set Screw — upper left — makes it a *Self-Locker* . . . because the keen edges of the counter-clock-wise **KNURLS** definitely prevent creep, regardless of the most chattering vibration. A real fastener, if ever there was one . . . positively won't shake loose!

(B) The **KNURLING** of this patented "Unbrako" Socket Set Screw — lower left — as shown, — *swages* the threads, so that it becomes a most excellent *Self-Locker* . . . for use where the type of point does not lend itself to knurling — a Set Screw that positively *won't shake loose!*

OVER 45 YEARS IN BUSINESS

Write us for the name and address of your nearest "Unbrako" Industrial Distributor and your copy of the "Unbrako" Catalog.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PA. BOX 590

BRANCHES: CHICAGO - DETROIT - INDIANAPOLIS - ST. LOUIS - SAN FRANCISCO

(Continued from page 206)

welded shapes and fabrications; non-ferrous metals, particularly the bronzes, aluminum and magnesium; also materials of construction especially adapted for power plant construction and maintenance.

Machines and Tools—Hand and portable electric tools, tool-making machines, wood-working machines especially adapted for plant maintenance and field work.

1 1 1

HENRY J. HOWLETT NAMED PRESIDENT OF CONTAINER LABORATORIES

Henry J. Howlett, secretary of the American Management Association for the past 13 years and director of AMA's National Packaging Exposition and Conference on Packaging, Packing and Shipping, has been named president of Container



Henry J. Howlett

Laboratories, Inc., packaging and packing engineering consultants with laboratories in New York, Chicago and San Francisco. He succeeds the late E. A. Throckmorton, Jr. He will continue to be active in affairs of the AMA as a member of the Planning Council of the AMA Packaging Division.

1 1 1

ASBESTOS BASE INORGANIC ELECTRICAL INSULATION

"Quinterra" is the name of an asbestos-base, completely inorganic electrical insulation which possesses properties of thinness and electrical insulating strength never before attained in a flexible, inorganic asbestos sheet, recently announced by the Johns-Manville electrical department, 22 East 40th street, New York, N. Y.

The new insulation resembles paper and is furnished in long lengths in roll or tape form. It is of closed structure and has no holes or interstices, and is said to retain its high dielectric strength of well over 250 VPM even at elevated temperatures. The product can be varied from a tissue-thin of 1.5 mil to 20 mils in thickness.

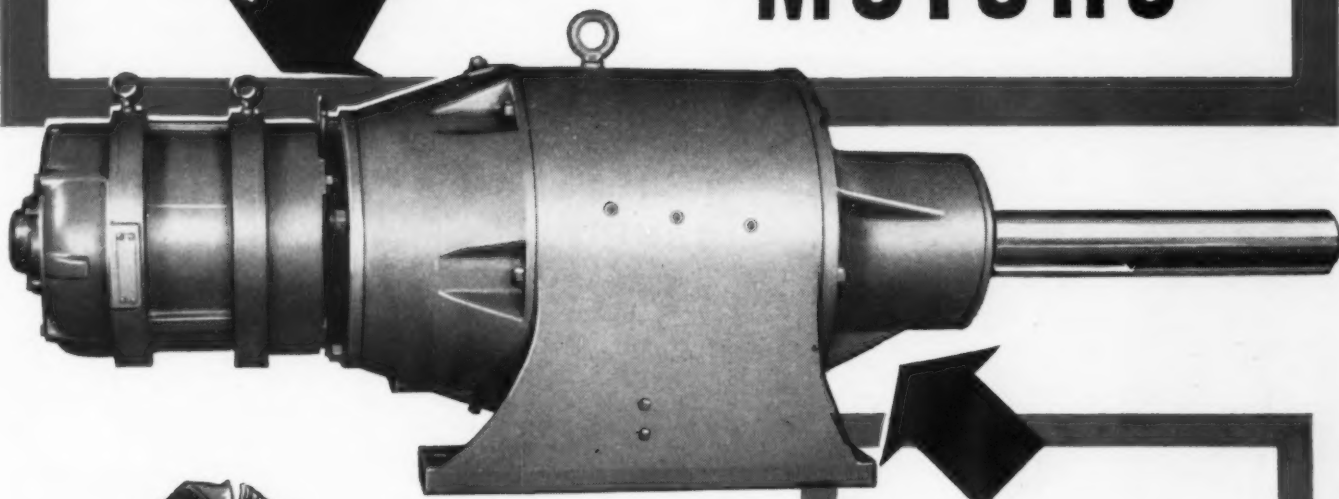
Quinterra is non-flammable, and it is claimed that sheets can be brought to a bright red heat in a Bunsen burner flame without igniting or melting. At room temperature the minimum dielectric strength is approximately 250 VPM, a value that increases with continued exposure to temperature and becomes about 400 VPM at 300 deg. C. It dissipates heat rapidly while retaining and improving its dielectric strength. Its thinness also makes for better utilization of space.

(Please turn to page 214)

HOWELL

industrial type

MOTORS



Here's a reliable gear-motor combination you'll want to look into.

**D. O. JAMES
GEAR REDUCER**

Why?

Because the motor is an industrial type motor built by Howell and backed by 33 years' experience in building industrial type motors exclusively.

The gear reducer is built by the D. O. James Manufacturing Company, specialists in their field with more than 50 years' experience.

The combination makes an integral packaged unit with the motor flange-mounted to the reducer, yet with a flexible coupling so that motor and reducer can readily be separated for maintenance.

For a modern, economical means of obtaining relatively low speeds from constant speed motors in your business, be sure—buy Howell!



For geared motors, motors with unique electrical characteristics, special mechanical form, or standard motors (with any type of enclosure) from 1/6 through 150 HP, consult your HOWELL representative.

HOWELL ELECTRIC MOTORS CO., HOWELL, MICHIGAN
MANUFACTURERS OF PRECISION BUILT, INDUSTRIAL TYPE MOTORS

Seymour PHOSPHOR BRONZE ROD

MANY STANDARD SIZES NOW IN **STOCK!**

Prompt deliveries of 1/8" to 2" diameter rod are now being made in both outstanding Seymour Phosphor Bronze mixtures listed below.

To offer you this improved service, we have built up a complete range of finished and ready-to-finish bar sizes. This enables us to supply your immediate, emergency requirements from stock, or make shipment of larger, mill run quantities within two or three weeks.



SPECIAL FREE TURNING PHOSPHOR BRONZE

88% COPPER 4% TIN 4% LEAD 4% ZINC

Tensile strength PSI	60,000
Elongation % in 2"	20
Elec. Cond. % I.A.C.S. at 20°C	12%
Machinability	
(Free cutting Brass equals 100)	100%

For all types of screw machine products. Also gears, bearings, pinions, etc. Used where a combination of excellent machinability, toughness and corrosion resistance is a "must."



GRADE B PHOSPHOR BRONZE

94% COPPER 5% TIN 1% LEAD

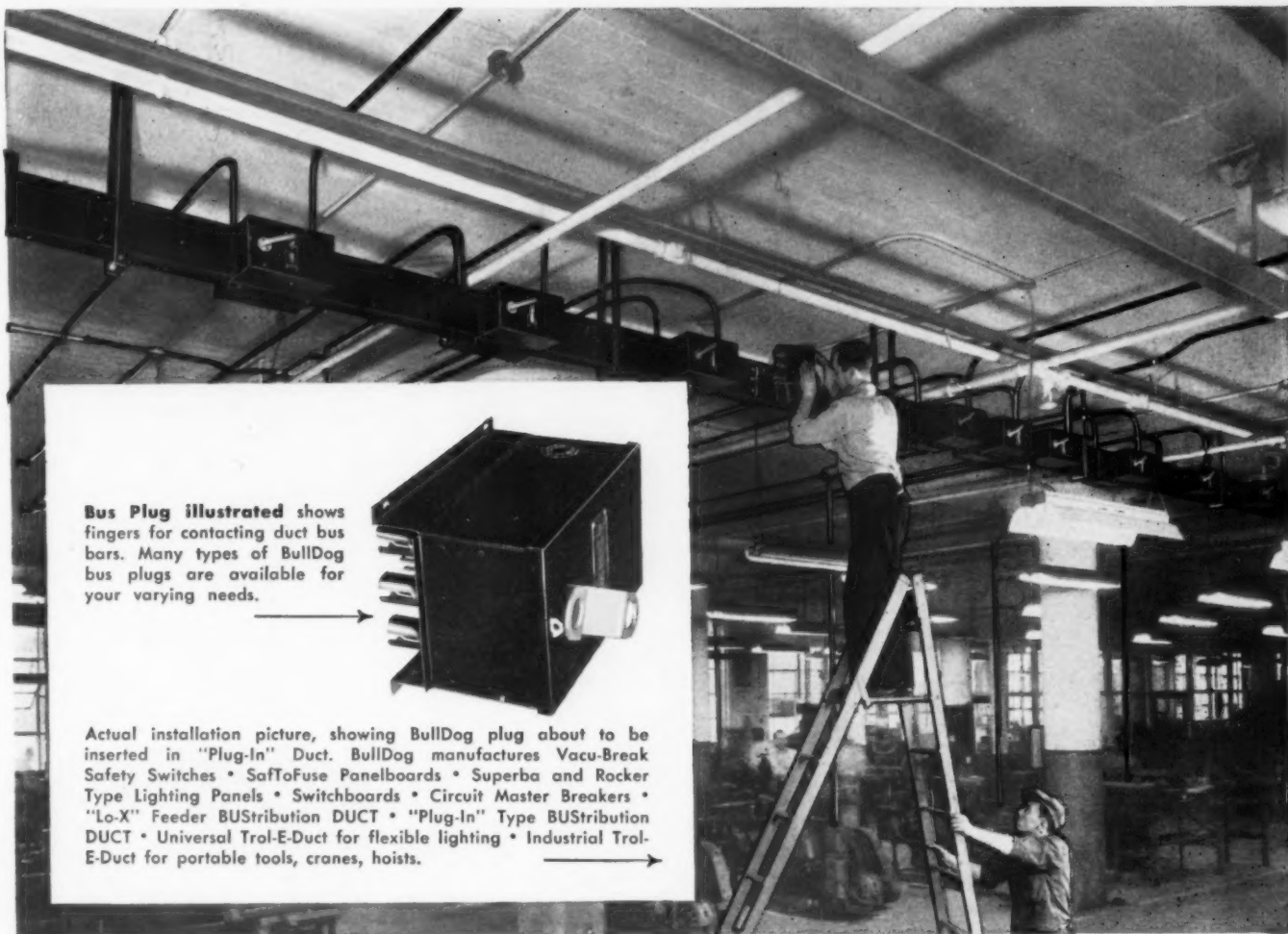
Tensile strength PSI	60,000
Elongation % in 2"	20
Elec. Cond. % I.A.C.S. at 20°C	16
Machinability (Free cutting Brass equals 100)	50%

For products demanding qualities of non-leaded Phosphor Bronze yet which must be cut, threaded or milled. Used on high speed automatic cutters.

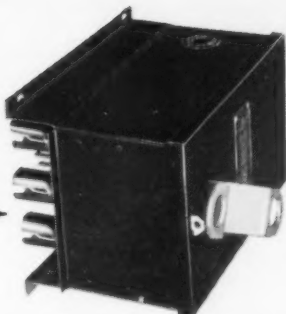
SEYMOUR

THE SEYMOUR MANUFACTURING COMPANY, SEYMOUR, CONN.





Bus Plug illustrated shows fingers for contacting duct bus bars. Many types of Bulldog bus plugs are available for your varying needs.



Actual installation picture, showing Bulldog plug about to be inserted in "Plug-In" Duct. Bulldog manufactures Vacu-Break Safety Switches • SaftoFuse Panelboards • Superba and Rocker Type Lighting Panels • Switchboards • Circuit Master Breakers • "Lo-X" Feeder BUStrIbution DUCT • "Plug-In" Type BUStrIbution DUCT • Universal Trol-E-Duct for flexible lighting • Industrial Trol-E-Duct for portable tools, cranes, hoists.

Power you can tap without tapping the till

DOES your production line go to sleep every time you install a new machine or move an old one? Do you have to cut the power? Cut production? And take a cut on profits?

With Bulldog "Plug-In" BUStrIbution DUCT, you can tap *live power* where you want it, when you want it. To move a machine, or any number of machines, you simply disconnect the plug from the duct, move, and reconnect at the new location.

All other machinery keeps humming a tune of dollars saved when "Plug-In" power plugs the profit leaks of complete shut-down.

Efficiency means economy

Bulldog "Plug-In" Duct offers low initial expenditure . . . practically no maintenance requirements . . . maximum safety and flexibility. Material is selected for long life and properly designed for relocation adaptability. "Plug-In" Duct is an investment that will pay dividends in years of usefulness, efficiency, economy.

Completely salvable

Like all Bulldog BUStrIbution systems, "Plug-In" Duct is *completely salvable*. When you move the system itself, not a single part need be scrapped . . . not a nut or bolt. Call your Bulldog Field Engineer.

He has full technical data on all Bulldog products and will be glad to answer any of your questions. If you wish, he can show you a Bulldog installation near your own plant.

Bulldog's Field Engineers welcome the chance to sit in on planning stages of a building project. Their knowledge of electrical distribution layout can mean savings in installation and maintenance costs, as well as highest efficiency and reliability in actual operation. Why not take advantage of this pre-building service?

BULLDOG ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN • FIELD OFFICES IN ALL PRINCIPAL CITIES
IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO

BULLDOG



HEADQUARTERS FOR ELECTRICAL DISTRIBUTION

*It's costing you
MONEY
not to have this
free booklet*



This brochure points the way to *unexpected* savings from an *unsuspected* source! It offers proof that you may be paying dearly for neglected insanitary washrooms . . . presents evidence that a *properly planned* washroom service can save you more money . . . in more ways . . . than you may think possible . . . An "Ideal Washroom Maintenance Service" cites telling facts and figures—lets you discover for yourself how West can improve your employee relations, and also effect impressive savings in labor, time, and maintenance materials. And at unbelievably low cost, too! West has "serviced" industrial washrooms from coast-to-coast for over half a century!

NO CHARGE! NO OBLIGATION!

Write at once for this vitally important brochure! Simply fill out and clip the coupon to your business letterhead.



PLEASE CLIP TO YOUR BUSINESS LETTERHEAD

WEST *Disinfecting Company*

42-23 WEST ST., LONG ISLAND CITY 1, N. Y.

I would like a copy of "An Ideal Washroom Maintenance Service"

NAME _____

POSITION _____

ADDRESS _____

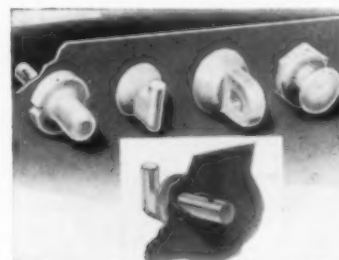
**NEW RESIN FOR
PROTECTIVE COATINGS**

A phthalic alkyd resin which does not haze in the presence of zinc oxide has been introduced by U. S. Industrial Chemicals, Inc., 60 E. 42nd St., New York, N. Y. Known as Aroplaz 1248-M, the new product, according to the manufacturer is applicable for formulation of architectural paints and enamels, especially for use in mill whites for textile mills, and for all maintenance finishes. It is a pure, long-oil, oxidizing alkyd, supplied at 70% solids in mineral spirits. The new resin obviates the characteristic weakness of alkyds to develop a surface haze. Other features include improved brushing characteristics, and a faster drying rate.

♦ ♦ ♦

NEW FASTENER DEVELOPMENT

The illustration shows plastic spring-lock refrigerator shelf supports which lock and unlock with a quarter turn, developed by the Simmons Fastener Corporation, Albany, N. Y. The fasteners are made of polystyrene, ethyl cellulose, or butyrate, and are produced with steel inserts to provide for maximum strength. As indicated by the illustration, a variety of



Variety of heads can be made for specific uses.

heads can be developed for specific uses to meet the requirements of shelf supports, dashboard plugs, ornamental knobs, and so on. The spring wire, which is twisted at installation, provides high torsional strength to withstand vibration, and at the same time enables speedy, labor-saving installation.

It is stated that accessibility to the back of the sheet in which the fasteners are mounted is unnecessary, and that the fasteners can be installed from one side of the panel so that both original installations and replacements can be made "blind".

♦ ♦ ♦

**A. S. T. E. NOW
IN OWN HOME**

The American Society of Tool Engineers has moved from the Penobscot Building, Detroit, Mich., to an attractive new home of its own on Puritan Avenue, between Monte Vista and Manor Avenues, Detroit, Mich., which provides the organization with approximately 12,000 sq. ft. of floor space for the executive secretary and his staff and other key employees. The new home is financed largely by a special issue of 4½% investment bonds held by ASTE chapters and members, which has been almost completely subscribed.

(Please turn to page 218)



Your Alcoa distributor is ready to help

FASTEN ALUMINUM WITH ALUMINUM..

Whether your job calls for wood screws, machine screws, rivets, nuts, big bolts or small ones—or self-tapping sheet metal screws—your Alcoa distributor is ready to supply Alcoa *Aluminum Fasteners* . . . so you can *fasten aluminum with aluminum*.

The advantages? (1) You minimize the chance of galvanic corrosion when fastenings of heavy metals are used with aluminum. (2) You give your product the same advantages in fasteners that you gave it when you specified aluminum in the first place. More light weight . . . higher corrosion resistance . . . better appearance.

For overnight service from the stock of Alcoa Aluminum Fastenings nearest you, call your Alcoa distributor listed here. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pennsylvania. Sales offices in principal cities.

Atlanta, Georgia
J. M. Tull Metal & Supply Co., Inc.
Phone: WAlnut 3525

Baltimore, Maryland
Whitehead Metal Products Co., Inc.
Phone: LAFayette 2300

Buffalo, New York
• Brace-Mueller-Huntley, Inc.
Phone: RIVERSide 2620
• Whitehead Metal Products Co., Inc.
Phone: CLeVELand 1475

Cambridge, Massachusetts
Whitehead Metal Products Co., Inc.
Phone: TRowbridge 6-4680

Charlotte, North Carolina
Edgcomb Steel Company
Phone: 4-9768

Chicago, Illinois
• Central Steel & Wire Company
Phone: REPUBLIC 3000
• Steel Sales Corporation
Phone: BISHop 7700

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Williams & Company, Inc.
Phone: CHerry 4700

Cleveland, Ohio
Williams & Company, Inc.
Phone: EXpress 7000

Columbus, Ohio
Williams & Company, Inc.
Phone: MAIn 3291

Dallas, Texas
Metal Goods Corporation
Phone: DIXon 4-3925

Detroit, Michigan
Steel Sales Corporation
Phone: TYler 6-3000

Houston, Texas
Metal Goods Corporation
Phone: BEacon 3-8881

Kansas City, North, Missouri
Metal Goods Corporation
Phone: NORclay 3516

Los Angeles, California
• Ducommun Metals and Supply Co.
Phone: KIMball 0181

• Pacific Metals Co., Ltd.
Phone: PROspect 0171

Newark, New Jersey
Whitehead Metal Products Co., Inc.
Phone: BIGelow 8-8500

New Orleans, Louisiana
Metal Goods Corporation
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Whitehead Metal Products Co., Inc.
Phone: WAlkins 4-1500

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• Edgcomb Steel Company
Phone: GARfield 3-6300
• Whitehead Metal Products Co., Inc.
Phone: BALdwin 9-2323

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Portland, Oregon
Pacific Metal Company
Phone: BRoadway 0695

Rochester, New York
Brace-Mueller-Huntley, Inc.
Phone: GLenwood 0962

San Francisco, California
Pacific Metals Co., Ltd.
Phones: MISSION 7-1104
ENTerprise 10806

Seattle, Washington
Pacific Metal Company
Phone: MAIn 6925

St. Louis, Missouri
Metal Goods Corporation
Phone: GOOd fellow 1234

Syracuse, New York
• Brace-Mueller-Huntley, Inc.
Phones: SYRacuse 73-3341 9-6621
• Whitehead Metal Products Co., Inc.
Phone: SYRacuse 5-4112

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Williams & Company, Inc.
Phone: ADams 8102

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It STAYS CLEANER LONGER....

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TOTALLY-ENCLOSED....FAN-COOLED MOTOR
SAVES 80% OF MAINTENANCE COSTS

COMPARE CLEANING COSTS!

	Conventional* Fan-Cooled Motor	VS C-W Sealedpower Motor
	Normal (Not Extra Dirty) Service	
FREQUENCY	EVERY YEAR a conventional fan-cooled motor requires cleaning, in the opinion of experienced maintenance chiefs.	ONCE EVERY 3 YEARS is often enough for a Sealedpower motor, according to those who have had experience with it.
OPERATIONS REQUIRED	17 OPERATIONS—to shut down, dismantle, clean and reassemble motor. Motor must be shut down and taken out of production, for about 3 hours.	NO NEED TO SHUT DOWN in normal—not extra dirty—duty, no need to remove fan cowl, etc. Brushing cowl end, and cleaning outside of motor is sufficient.
TIME, LABOR COSTS	\$4.95 3 HOURS time, estimated by motor maintenance men, at union scale of \$1.65 per hour, totals \$4.95 yearly per motor, in normal service.	14¢ ½ HOUR time, once every 3 years, cleans a Sealedpower motor. At \$1.65 per hour, cleaning cost per year is only 14¢.
COSTS IN ABNORMAL SERVICE	EVERY 3 MONTHS, a conventional motor, operating where dirt or lint is excessive, should be cleaned. That requires 18 hrs. of labor at \$1.65, for a total cleaning cost of \$29.70 per motor, during an interval of 18 months.	ONLY ONE cleaning every 18 months keeps a Sealedpower motor running cool and efficiently. Only ½ hour to remove fan cowl, brush fan and outside of motor and replace cowl. A labor cost of only \$1.24 per motor.

*A totally-enclosed, fan-cooled motor, of conventional design, was used for comparison

You get this dollar-saving design only when you specify C-W Sealedpower Motors. No other totally-enclosed, fan-cooled motor has exterior cooling, with the fan-driven airstream blowing over the finned frame, carrying dust and fumes outside and away. It beats rust and corrosion,

too, because the frame is rugged cast iron.

RATINGS FROM 3 TO 60 HP, horizontal or vertical, with NEMA "C" or "D" flange mountings. Many ratings are stocked . . . see C-W's weekly Stock Sheet. Talk over your motor needs with a Crocker-Wheeler representative.

FOR ANY APPLICATION WHERE
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Sealedpower Motors



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Flexible Couplings

It SKIPS SHUTDOWNS

150% MORE
COOLING SURFACE

is provided by the radiating fins, exclusive with the C-W SEALEDPOWER. Here, fluttering streamers trace the fan-driven airstream that blows dust and fumes outside and away.



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ANOTHER Pannier FIRST

You get fast, efficient printing of $\frac{1}{8}$ " to 2" diameter, ferrous and non-ferrous products with the Pannier Universal Marking Machine, No. C-1055-A. This "Master Marker" handles uniform and irregular lengths up to 24". It prints continuously or intermittently at 72 feet per minute. It prints in perfect register, thus correctly marks bar recesses.

Powered by a $\frac{1}{4}$ H.P. motor, the machine is equipped with a quick-change printing wheel; belt conveyor; and automatic, interior-feed ink fountain for maximum service at minimum cost.

Pannier is a specialist in design, engineering and manufacture of all types of marking equipment. Write for recommendations.

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Bulletin C-1055-A, giving detailed specifications, is yours on request.

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THE PANNIER CORPORATION

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Pittsburgh 12, Pa.

Engineered Purchase Specifications Aid Industry, Business, and Government

By E. W. Ely, Chief,
Commodity Standards Division, National Bureau of Standards

The purchasing agent who wishes to make use of a scientific approach to his problems will find that his task has been greatly simplified by the National Bureau of Standards. Use of dependable specifications—the only logical way to achieve economy in purchasing—has been facilitated through the Bureau's compilation of all the standards and specifications in general use for commodities produced or purchased in this country. The result, a comprehensive reference book of unusual simplicity and clarity (the National Directory of Commodity Specifications), briefs, catalogs, and indexes the information needed in buying all types of products. The haphazard method of wasteful searching and chance buying with incomplete information is thus rendered unnecessary.

A specification is a concise, definite, and complete statement of what the buyer requires from the seller. It includes limiting values for the properties necessary to meet the required service, with proper tolerances. The specification thus serves as the common meeting ground for manufacturer, distributor, and user.

Sample vs Specifications

Large-volume purchases presuppose definite specifications so that the bidder may know definitely just what he will be required to supply. The only alternative to the system of purchase by competitive bids on specifications is purchase on sample. The latter method implies that each bidder's product must be considered independently, and it is often a very difficult matter to decide between different combinations of quality and price. A well-written specification, on the other hand, enables bidders to know exactly what is desired or required and also what procedure the purchaser may follow to satisfy himself that the materials submitted are or are not satisfactory.

The Federal Government is the largest single purchaser of consumer goods in this country. Obviously the purchases of an organization of this size can be made to greater advantage under carefully prepared specifications. Prior to 1921 each agency of the Government had its own specifications for all materials it purchased, the requirements often being in conflict with each other and seldom in conformity with commercial practice. To avoid duplication of effort in the procurement of material and to insure better utilization of the national resources and industries, the Federal Specifications Board was established and given the duty of not only compiling and adopting standard specifications but also of bringing them into harmony with the best commercial practice wherever conditions permit. The Board is made up of qualified representatives from the various branches of the Government, with the Director of the National Bureau of Standards as *ex officio* chairman.

Each Federal Specification, of which there are now more than 1900, is formulated by one of nearly 80 Federal Specifications Technical Committees consisting of official representatives of every department and establishment interested in the commodity covered by the specification. Members of the staff of the National Bureau of Standards act as chairmen of between one-third and one-half of these committees. Full consideration is also given to such advice as is obtained from commercial and industrial concerns. The specification thus prepared by the technical committee is submitted to all Government agencies and to interested engineering and technical societies for comment and criticism. All criticisms received are given consideration in plating the specification in final form for use in Government purchasing. Federal Specifications are continually being revised to keep them abreast of the best current manufacturing practice and the needs of the Government.

In addition to Federal Specifications adopted by the Federal Specifications Board, a number of Government agencies formulate and maintain specifications for commodities in which they have a special interest. These include specifications for articles purchased almost exclusively by one or two agencies—such as the Joint Army-Navy Specifications, Army Specifications, Navy specifications, Air Force Specifications, and Veterans Administration Specifications—and the standards for foods, drugs, and agricultural products established by the Food and Drug Administration and the Department of Agriculture.

Realizing the need for specifications based on research and testing, industrial and engineering groups have also been active in the formulation of purchasing standards. Some of the technical societies conducting or associated with standardization activities are the American Standards Association, the American Society for Testing Materials, the American Society of Mechanical Engineers, the Society of Automotive Engineers, and the National Aircraft Standards Committee. Many of the trade associations and similar industrial groups are deeply interested in simplification as well as standardization.

The National Directory

With the object of bringing about the widespread use of specifications for purchasing, and in order to provide a background for the development of better specifications, the Bureau undertook the compilation of a classified list of specifications which had been formulated not only by public purchasing agencies but also by nongovernmental organizations having national recognition. The result was a guide for both specification writers and buyers of commodities—the National Directory of Commodity Specifications.

In compiling this material, a strenuous effort was made to obtain current information concerning useful standards and (Please turn to page 220)



What's your need in **SIZE?**

Globe seamless steel tubing is made hot finished and cold drawn in alloy and carbon steels in sizes from $\frac{1}{2}$ inch to $6\frac{3}{8}$ inches outside diameter.

Globe seamless stainless steel tubing is available in tube sizes from $\frac{1}{2}$ inch to $6\frac{3}{8}$ inches outside diameter and in pipe sizes $\frac{1}{8}$ inch to 6 inches, standard, extra strong and double extra strong weights.

Gloweld (electric welded) stainless steel tubing may be had in sizes ranging from $\frac{1}{4}$ inch to 5 inches outside diameter inclusive, in standard weight pipe (schedule 40) sizes $\frac{1}{8}$ inch to 2 inches, and in light weld pipe (schedule 10) size $\frac{1}{8}$ inch to $4\frac{1}{2}$ inch, inclusive.

Your tubing needs may lie somewhere within the above ranges — whatever your requirements, Globe is qualified by experience and facilities to supply you with tubing of the quality and uniformity you demand. GLOBE STEEL TUBES Co., Milwaukee 4, Wisconsin.

GLOBE
Stainless
STEEL TUBES





Newton's Law Still Holds Good



Gravitation doesn't appear as a plant expense but it's a big factor in keeping costs up. Not even a feather will raise itself into working position, move sideways or deposit itself where needed. Human or steel muscles are needed to lift and move raw materials, semi-finished goods and finished products.

Where heavy loads are concerned, plant engineers don't depend on human muscles, but think in terms of a Shepard Niles overhead traveling crane. With a multitude of sizes and types available, there's bound to be one to fit your own needs — and a trained, experienced engineer of America's leading builder of overhead traveling cranes will help you select the one best fitted for your needs.

No matter what size or style Shepard Niles overhead traveling crane is selected to do your job, you can depend on sound design, rugged and precise construction, reserve capacity and economical, trouble-free operation year after year.

★ Shepard Niles engineers may feel an electric hoist is better fitted for your needs than an overhead traveling crane. Their recommendations are unbiased because Shepard Niles makes both. Only the type crane or hoist best suited for your job will be recommended.

Shepard-Niles
CRANE & HOIST CORPORATION

462 SCHUYLER AVENUE • MONTAUR FALLS, N.Y.

(Continued from page 218)

specifications from all national organizations that represent industry, or some branch of industry, and that are known to be interested in the formulation of commodity specifications. Consequently, more than 500 such organizations were contacted, including trade associations, technical societies, and the various purchasing agencies of the Federal Government.

Each standard, specification, simplification, code, safety rule, and similar document for general use was examined in order to determine its particular place in the general system of arrangement. Every effort was made to summarize, classify, and index the material in such a way that it would give the user complete and valuable information.

The 1945 revision of the Directory, consisting of 1311 pages, was rapidly and widely distributed, but under post-war conditions additional information on new commodities was an obvious necessity. However, instead of issuing an entirely new volume, the National Bureau of Standards has placed all of the new information in a 322-page Supplement.

44,000 Specifications

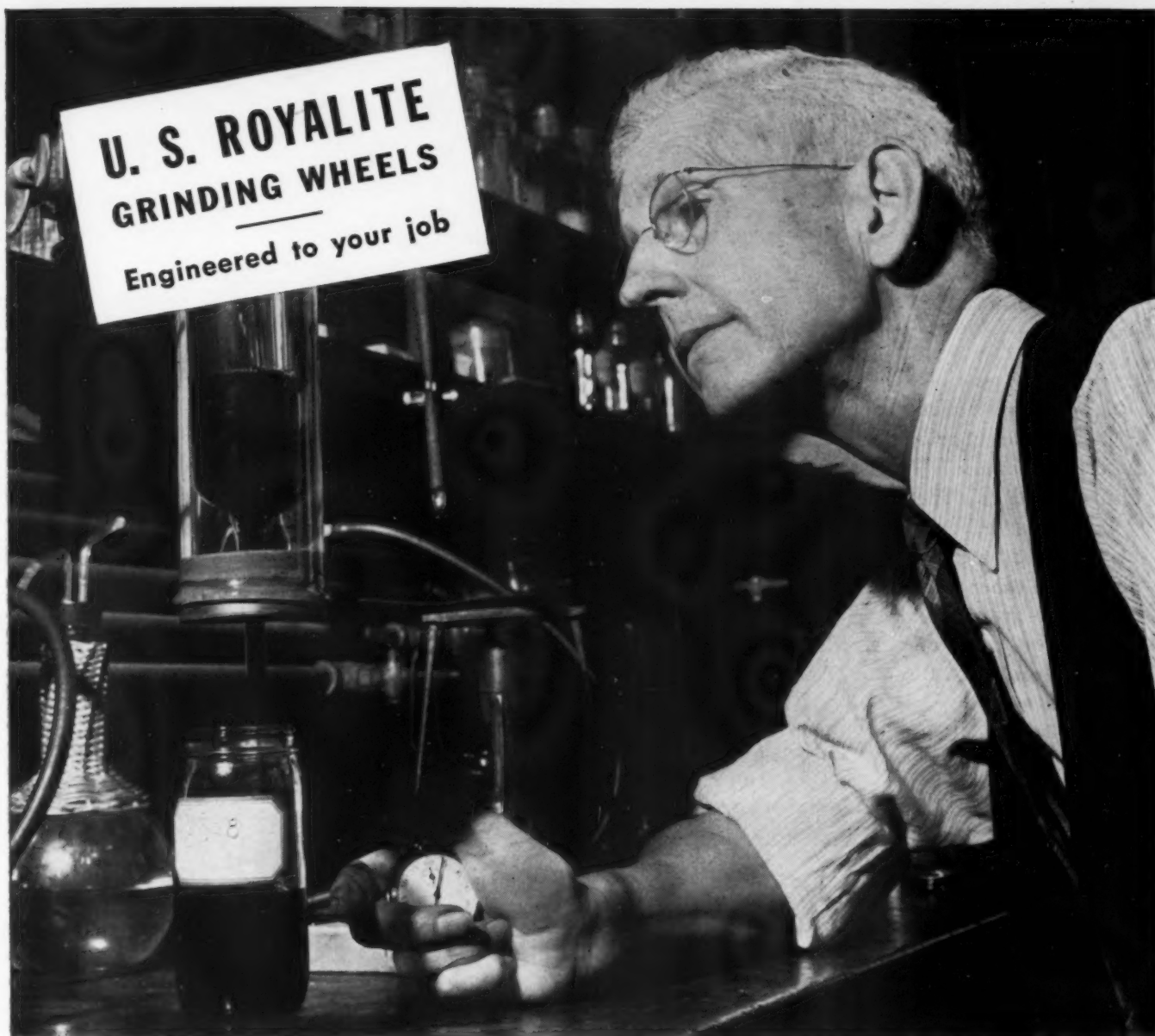
The two volumes provide a complete listing by name, designating number, and issuing or sponsoring organization of all the standards, specifications, and methods of test in general use in this country. Included are the voluntary *Simplified Practice Recommendations* and the voluntary *Commercial Standards* which have been developed by industry under the cooperative procedure of the National Bureau of Standards. Many items are not strictly commodity specifications but closely related information essential to most users.

Each specification, of which there are a total of 44,000, is briefly summarized as to technical characteristics, scope, and special applications. An extensive alphabetical index lists individual items under their various trade and technical names in order to facilitate the ready location of any item. A list of addresses of the issuing or sponsoring organizations is also provided, from whom copies of the standards and specifications may be obtained.

The material in the Directory and Supplement is especially coordinated for the use of new manufacturers who need detailed information concerning finished goods or practical data on available materials. It is equally valuable to old, established manufacturers who desire to introduce new products or to use materials with which they are not familiar. This information is also useful to Government procurement officers in purchasing commodities for which no Federal Specifications exist. In such cases there is often found in the Directory of its Supplement a suitable specification which may be used as a procurement document at the discretion of the purchasing officer.

The grouping together of items related to the same subjects or commodities is made possible by a decimal system of classification in the issues of the Directory that have been published to date. In future revisions, a new classification system

(Please turn to page 226)



An old timer talks about Grinding Wheels...

You're looking at a test of the kinetic viscosity of liquid resin—one of many tests made to be sure you get a grinding wheel that is just what you've asked for . . . and more.

The purpose is always the same—*more production at lower cost*. We draw from our immense research facilities in every conceivable phase of abrasives and bonds. In addition, we have at our disposal the vast research data covered by the thousands of other products made by United States Rubber Company.

That is why we can deliver U. S. Royalite Grinding Wheels that are precisely engineered to your job, whether you're snagging castings, grinding ball races or working with billets, bits,

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For more information, write United States Rubber Company, Grinding Wheel Dept., Fort Wayne 4, Indiana.

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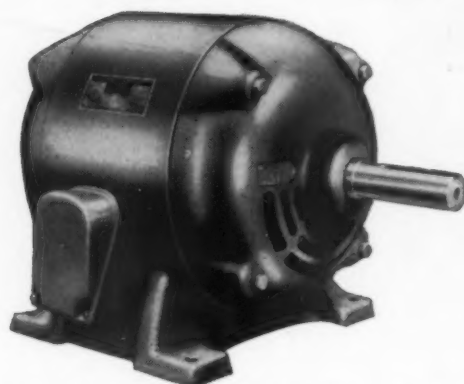
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STANDARD LIFE-LINE MOTORS—Standard and "Near-Standard" motors are available—dripproof, splashproof and totally-enclosed, ball-bearing motors with standard electrical characteristics. A-c, single-phase, 60-cycle, 110-220-volt, Type CAP capacitor-start, induction-run, 1 to 3 hp, 1750 rpm . . . a-c, 3-phase, 60-cycle, squirrel-cage motors, ½ to 15 hp in standard speed ratings.



INDUSTRIAL ANALYZERS—TA unit for a-c testing. Ratings: 5, 25, 125 amps; 150, 300 volts; 25-133 cycles. TX unit for d-c testing. Ratings: 5, 7, 75, 750 amps; 15, 150, 300, 750 volts; 200 to 20,000 ohms (5 to 500 midscale). Send for Catalog Section 43-100, Portable Instruments and Ad J-40356.



Westinghouse Gearmotors are today's best answer for obtaining speed reduction on drive applications from 1 to 75 hp.

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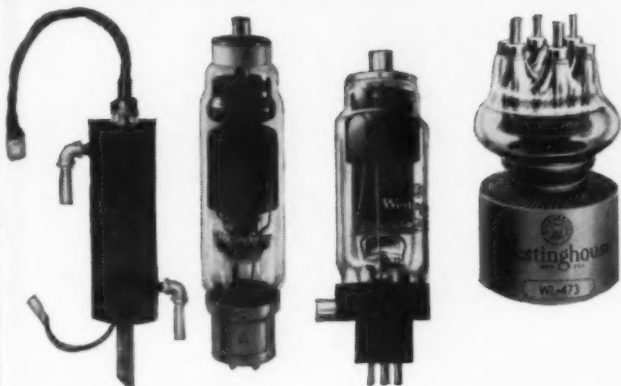


Westinghouse

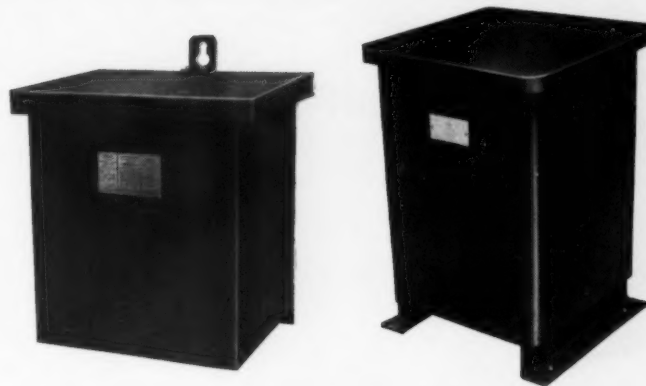
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

MORE PRODUCTIVE POWER FOR

From Stock



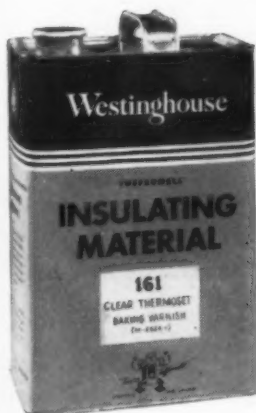
ELECTRONIC TUBES—Replacement electronic tubes for *all* types of electronic apparatus of any make. Consult "Easy Guide for Electronic Tube Ordering" Catalog 86-020. Call or write for copy today. All tubes available for immediate delivery.



DRY-TYPE TRANSFORMERS—Lighting and Power Service Transformers, Types AVR 15 to 200 kva, single-phase; 37½ to 300 kva, 3-phase; Types AJR 3 to 10 kva, single-phase; 10 to 25 kva, 3-phase and Types AVR and AJR in same ratings with circuit breakers within transformer cabinets.

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INSULATING VARNISHES



High resistance to heat, oil, moisture and chemicals makes Westinghouse Insulating Varnishes the choice of countless discriminating users.

Application Sheet 65-120, will help you determine the varnish best suited to your needs. Write for your copy today.

A Westinghouse Insulating Varnish engineer will be glad to study your needs and make recommendations. Call the Westinghouse office nearest you, or mail the handy coupon.

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Outstanding among these excellent finishes is an aluminum paint for outdoor or indoor use; a yellow traffic paint for marking streets, factory aisles, or parking lots. Also a red floor paint with extreme durability and resistance to oil, grease, water and chemicals. A red primer has been developed for metal structures or machinery subject to corrosive conditions. An oil-proof machine tool enamel is now available in light or dark gray, or an oil-resistant spirit enamel, available in gray, red and orange.



INDUSTRY

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DATE _____

Please send representative to see

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- ☐ Life-Line Motors
☐ Electronic Tubes

- ☐ Dry-Type Transformers
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- ☐ "Tuffernell" Varnishes
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1 AIRCRAFT PRODUCTS: AN Bolts, Nuts, Screws, Studs, Cotters (including Stainless Cotters)



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17 WIRE ROPE CLIPS with the new Hi-Center Saddles and extra-strength U bolts



18 PIPE PLUGS, square head and headless; forged steel, heat-treated



19 LOCK-THRED STUDS—Thread lock and seals in standard tapped holes

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SEND US THIS COUPON FOR COMPLETE INFORMATION ON ANY OF THE FASTENERS ILLUSTRATED ABOVE

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 1971 West 85th Street Cleveland 2, Ohio

DON'T FORGET! Check the numbers on this coupon which correspond to the numbers of the fasteners above on which you wish more information.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

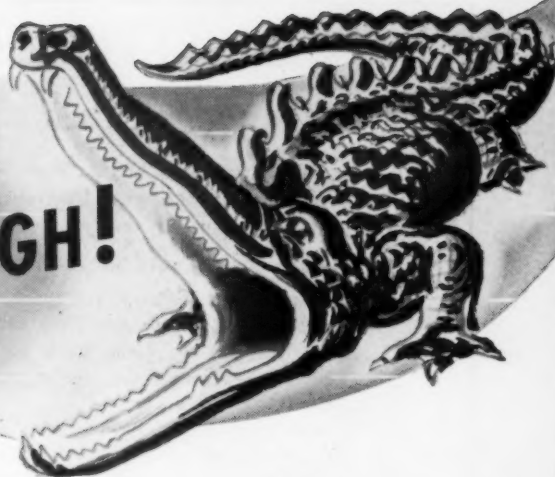
20 "BOLTS, NUTS & SCREWS"—a compilation of important technical articles on the manufacture, inspection, specification and use of fasteners; order from The Lamson & Sessions Co. at \$1.50 per copy.

21 "BOLT, NUT & RIVET STANDARDS"—a complete and up-to-date standards book on commercial fasteners. Available only from the American Institute of Bolt, Nut & Rivet Manufacturers, Hanna Bldg., Cleveland, Ohio. \$2.00 per copy.

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a hard "hide"...
AND TOUGH CLEAN THROUGH!



LAMSON "1035"
 SET SCREWS



HERE'S THE *Big* DIFFERENCE

Ordinary Set Screws

HARD
 EXTERIOR

SOFT
 CORE

SOFT CORE
 MAY TWIST OFF
 UNDER HIGH TORQUE

Lamson "1035" Set Screws

HARD
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TOUGH
 CORE

SET SCREWS
 WON'T BREAK
 OFF WITH THIS
 TOUGH, HEAT
 TREATED CORE

YOU CAN'T JUDGE a set screw by its "skin" alone. You've got to get *below* the surface to determine real set screw quality.

Through a series of special heat treatments, Lamson "1035" Set Screws attain not only a high surface hardness but also a rugged toughness *all the way through*. This results in the ideal combination for a set screw: (1) outer hardness which provides a sharp "biting" surface at the point and (2) internal toughness that will withstand heavy compression and prevent heads or shanks from twisting off under high torque.

For the majority of set screw applications, Lamson "1035's" will perform as satisfactorily as the highest

priced alloy product; yet **THEY SELL FOR THE SAME PRICE AS COMMON, ORDINARY SET SCREWS.**

Lamson "1035" Set Screws are available in a full range of commercial sizes.

So why not get premium quality without paying a premium price? Specify Lamson "1035" Set Screws for *double value*: a hard "hide" and toughness *all the way through*!

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SPECIAL PURPOSE

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and LA FURNITURE BOLTS • SEMI-FINISHED NUTS • LAMSON LOCK
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 STOVE NUTS • BARREL NUTS • OBLONG NUTS • CABINET BED BOLTS
 NUTS • PLASTIC INSERTS • EYE BOLTS • CLEVIS PINS • HINGE PINS •

NUTS • C
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 APPING SCR
 WEATHER-TIGHT BOL
 CAP SCREWS • FIN HEAD BOLTS

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Serve Many Purposes and Fields of Activity

All are quality products . . . rightly priced . . . rapidly produced. Our Creative Design and Engineering Departments are at your service.

For the latest data and ideas check the items of interest to you.

- Spirally wound Tubes, Cores and Cans.
- All fibre and combination fibre and metal cans.
- Friction plug, slip cover, screw cap containers.
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- All-Fibre Cans • Combination Metal and Paper Cans
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SALES OFFICES: Room 5632, Grand Central Term. Bldg., New York 17, N.Y., also 647 Main St., Hartford, Conn.
CANADIAN PLANT: The Cleveland Container Canada, Ltd., Prescott, Ontario



(Continued from page 220)

which is expected to be adopted by Government and nongovernmental agencies will be used. In fact, every effort will be made to increase the usefulness of the Directory.

The National Directory of Commodity Specifications (NBS Miscellaneous Publication M178), and its Supplement are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The 1945 Directory costs \$4.00 a copy; the 1947 Supplement, \$2.25. Questions concerning the Directory should be addressed to the Commodity Standards Division, National Bureau of Standards, Washington 25, D. C.

1 1 1

AMERICAN STANDARDS FOR TRANSFORMERS, REGULATORS AND REACTORS

A new edition of the American Standards for Transformers, Regulators, and Reactors, has just been released by The American Standards Association, Inc., 70 East 45th Street, New York, N. Y. Standard practices originally presented in publications of the American Institute of Electrical Engineers, the National Electrical Manufacturers Association, and the Edison Electric Institute, form the basis of the document.

The 18 Approved American Standards, which are bound separately, but collated in a stiff paper cover with screw fasteners, include a general document on terminology, providing definitions for the terms used in all the standards, one on general requirements, seven standards for the different types of transformers, three test codes, and six guides for loading and operation.

Copies of the 1948 edition of the American Standards for Transformers, Regulators, and Reactors, C57, are available from the association at \$4.00 each.

1 1 1

MOISTURE-BARRIER PACKAGING

Development of a new process for laminating polyethylene film to papers is announced by the Floyd A. Holes Co., Bedford, Ohio. Applications suggested include packaging of hygroscopic materials, delicate instruments, cap liners for pharmaceuticals and cosmetics, and liners for cartons, barrels and tubular containers. Laminations can be made ranging from tissue to medium weight board, which can be heat sealed on ordinary bar or roller type heat-sealing equipment. Laminate can be furnished in a variety of thicknesses ranging from 0.001 to 0.004 inch to meet the requirements of most packaging and industrial applications. In special applications, polyethylene can be laminated to metal foil, paper and cloth.

**IDLE SURPLUS
IDLE CAPITAL! CONVERT
IT TO CASH . . . LIST YOUR
COMPANY'S SURPLUS IN
PURCHASING'S CLASSIFIED
SECTION NEXT MONTH
SEE PAGE 358**

*Pull-tab Opener
in Every Roll
SAVES TIME - SAVES TAPE*

**SAFETEX
GUMMED TAPE**

SEAL IT
RIGHT
WITH GUMMED TAPE

**CENTRAL PAPER COMPANY,
Menasha, Wis.**

How can you possibly beat Bundyweld* for automotive tubing?

YOU'LL have any number of uses for Bundyweld steel tubing.

You'll like the qualities that give it a place in an average of *twenty parts* in every automobile produced today!

You'll like Bundyweld because of its strength, its accurate dimensions, its ability to carry high pressures and resist vibration fatigue.

You see, Bundyweld is made in a special way (described below) that gives it *two walls* rolled from a single steel, Monel or nickel strip. This patented construction gives it a head start on other tubings on a lot of counts.

If you want to know more of the reasons Bundyweld is first choice with automotive manufacturers, ask your Bundy distributor or representative (listed at the foot of this page) for all the facts. Or call us: *Bundy Tubing Company, Detroit 14, Michigan.*

**BUNDYWELD
TUBING IS
STRONGER!**

**IT'S DOUBLE-
WALLED FROM A
SINGLE STRIP!**

**HIGHLY RESISTANT
TO VIBRATION FATIGUE!**

LEAK-PROOF UNDER PRESSURE!

LOW IN COST!

WHY BUNDYWELD IS BETTER TUBING



1 Bundyweld Tubing, made by a patented process, is entirely different from any other tubing. It starts as a single strip of basic metal, coated with a bonding metal.



2 This strip is continuously rolled twice laterally into tubular form. Walls of uniform thickness and concentricity are assured by close-tolerance, cold-rolled strip.



3 Next, a heating process fuses bonding metal to basic metal. Cooled, the double walls have become a strong ductile tube, free from scale, held to close dimensions.



4 Bundyweld comes in standard sizes, up to 3/8" O.D. in steel (copper or tin coated), Monel or nickel. Special sizes can be furnished to meet your requirements.

Bundy Tubing Distributors and Representatives: Cambridge 42, Mass.: Austin-Hastings Co., Inc., 226 Binney St. • Chattanooga 2, Tenn.: Peirson-Deakins Co., 823-824 Chattanooga Bank Bldg. • Chicago 32, Ill.: Lapham-Hickey Co., 3333 W. 47th Place • Elizabeth, New Jersey: A. B. Murray Co., Inc., Post Office Box 476 • Philadelphia 3, Penn.: Rutan & Co., 404 Architects Bldg. • San Francisco 10, Calif.: Pacific Metals Co., Ltd., 3100 19th St. • Seattle 4, Wash.: Eagle Metals Co., 3628 E. Marginal Way • Toronto 5, Ontario, Canada: Alloy Metal Sales, Ltd., 881 Bay St. • Bundyweld nickel and Monel tubing is sold by International Nickel Company distributors in all principal cities.

BUNDY TUBING

★ ★

*REG. U.S. PAT. OFF.

ENGINEERED TO

YOUR EXPECTATIONS

★ ★



for New protection
against Old hazards
...get **WILLSON**



Style No. X41



GLOVE-FIT PROTECTION AGAINST SPLASH

... This Over-All* rubber goggle with snug fitting resilient rolled edge takes the danger out of splash and spatter; provides wearing comfort over spectacles.



Style No. 731



ONE-PIECE CAP CARTRIDGE ... New chemical cartridge respirator with four interchangeable cap cartridge filters protects against low concentrations of specific vapors and gases. U. S. Bureau of Mines Approved.



SETTLE THE DUST PROBLEM ... Newly approved by Bureau of Mines for all dusts. Easier breathing over long periods provided by extra large dual throw-away filters.

*Reg. U. S. Pat. Off.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest Willson distributor or write us direct.

Style No. 750D



GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

WILLSON
PRODUCTS, INCORPORATED
221 WASHINGTON STREET, READING, PA., U. S. A.

**MATERIALS HANDLING SHOW
CONVENTION HALL, PHILADELPHIA**

The third national Materials Handling Show will be held at Convention Hall, Philadelphia, Jan. 10-14, it was announced recently by Clapp and Poliak, Inc., the exposition management. The exposition is devoted to various systems of handling materials in production and shipment.

The show will be one of the five largest annual industrial expositions to be held in this country, the announcement stated. One hundred and ninety-two companies have leased 96,725 square feet of net exhibit space and the remaining 16,000 feet are expected to be occupied when the show opens.

This year the show will be jointly sponsored by the management and materials handling divisions of the American Society of Mechanical Engineers and the Material Handling Institute. The A.S.M.E. groups will conduct a five-day Conference on Materials Handling concurrently with the exposition. A Materials Handling Theatre will exhibit late films on handling subjects.

Emphasis in both the exhibits and conference talks will be placed on the need for greater efficiency in handling to reduce production and distribution costs, and the greater use of existing facilities for storage.

Admission to both the exhibits and the conference will be by registration. No charge will be made. More than 15,000 top management executives registered at the show in Cleveland last January.

Among the many types of equipment to be exhibited will be hand trucks, conveyors, hoists, monorails, portable elevators, stacking units, cranes, tractors, trailers, fork trucks, skids and pallets, and their respective accessories.

1 1 1

**PLASTIC COVERING MATERIAL FOR
WOODWORK AND WOOD
PRODUCTS**

Plastic covering material named Kalistron for walls and furniture, is announced by the Flexwood-Flexglass Division of United States Plywood Corp., New York, N. Y. According to the announcement, Kalistron is unique in that the finish including color, pattern and decoration has been applied to the back surface of transparent vinylite sheeting. The production technique, it is stated, has resulted in four significant qualities—first, relatively small quantities of any desired color or combination of colors can be economically produced; second, the color or pattern is not subject to direct wear or to the action of solvents; third, the color coating actually adds to the basic strength of the plastic sheet; and, fourth, surface irregularities produced by embossing in combination with the coloring pigment give definite appearance of depth to the final product.

Kalistron is produced with a suede-like backing which serves as protection for the color, adds to the strength and durability of the sheeting, and enables simple and rapid adhesion to plaster, wood, or other surfaces.

(Please turn to page 230)



LET CHASE CONTROL YOUR **TEMPER!**



For your convenience, there are 22 different copper alloys in wire form regularly produced by Chase.

COPPER-ALLOY WIRE

Insist on clean, bright wire with perfect "cast" . . . the characteristic of uncoiling uniformly and without twist . . . for a perfect product every time. Let Chase control your temper with the finest in wire and service!

LET Chase supply you with *copper-alloy wire* of such fine temper that there's no opportunity for you to lose yours over the prospect of a distorted product. Uniformity of temper in different directions largely determines whether wire being headed, extruded or otherwise plastically formed will flow uniformly and avoid giving you a badly formed product.

Wire produced in the Chase mills undergoes a series of severe tests to assure this precise adjustment of temper and control of grain size—plus uniform surface texture and color, accuracy of dimensions, complete freedom from physical defects. For the best, go to the best possible source . . . call Chase today!

Chase



the Nation's Headquarters for
BRASS & COPPER

WATERBURY 91, CONNECTICUT

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . handiest way to buy brass

ALBANY! ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON! INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS
NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER! SAN FRANCISCO SEATTLE ST. LOUIS WATERBURY (Indicates Sales Office Only)

A. T. MASSEY COAL CO., INC.

For Over a Quarter of a Century Shippers

STEAM
QUALITY COAL • COKE SERVICE
DOMESTIC

Capacity—10,000,000 Tons Annually

General Offices: Travelers Building, Richmond 19, Va.

Telephone L.D. 23 or 2-2816

CINCINNATI OFFICE

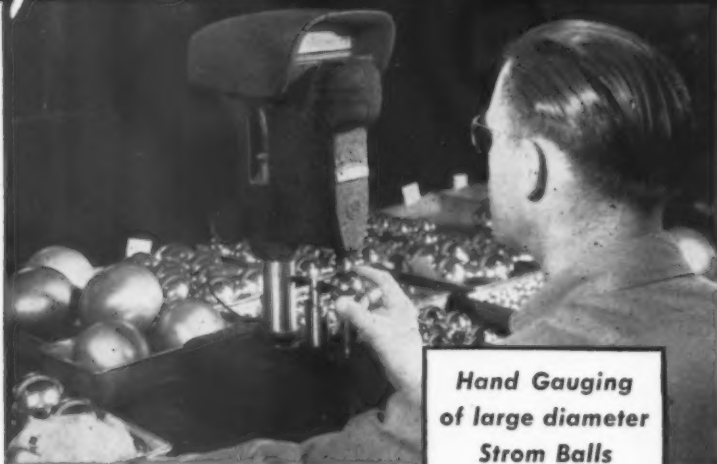
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CHICAGO OFFICE

64 E. Jackson Blvd.
Wabash 2-4034

Specify **STROM BALLS**



**Hand Gauging
of large diameter
Strom Balls
before packaging**

When you specify Strom Balls you are sure of getting balls with the highest obtainable degree of finish, sphericity, precision—balls that give the very highest quality of service in any bearing equipment. This high degree of perfection is the result of Strom's concentration for a quarter of a century on metal balls exclusively and the perfection of the processes and workmanship necessary to produce them. Strom Steel Ball Company, 1850 South 54th Avenue, Cicero 50, Illinois.

Strom BALLS  **Serve Industry**

LARGEST INDEPENDENT AND EXCLUSIVE METAL BALL MANUFACTURER

CHART LISTS RESPIRATORY PROTECTION SUGGESTIONS

A new chart suggesting the proper respiratory protection against more than 150 specific dusts, vapors and gases has been published by American Optical Company. Copies can be obtained by writing the company direct at Southbridge, Mass.

The chart presents a summary of recommendations made by the Safety Engineering Division of American Optical Company for the use of the company's R-1000, R-2000 and R-9100 respirators, all three of which have been approved by the U. S. Bureau of Mines.

The respiratory hazards are listed alphabetically in the chart with the proper protection clearly and easily identifiable.

1 1 1

WORLD'S LARGEST PIPE BENDING MACHINE

Engineers of the M. W. Kellogg Company, petroleum and chemical engineers, have perfected a bending process and apparatus which can handle pipe diameters up to 100 inches. The method bends pipe in the hot state under hydraulic pressure.



50" diameter pipe bend in newly developed apparatus at the Jersey City, N. J. Works of the M. W. Kellogg Company.

It is adaptable to small and large diameters, to thin and thick-walled pipe and to short or long radius bends. It is currently being employed to fabricate 50-inch pipe bends for the carrier lines of large oil refining units.

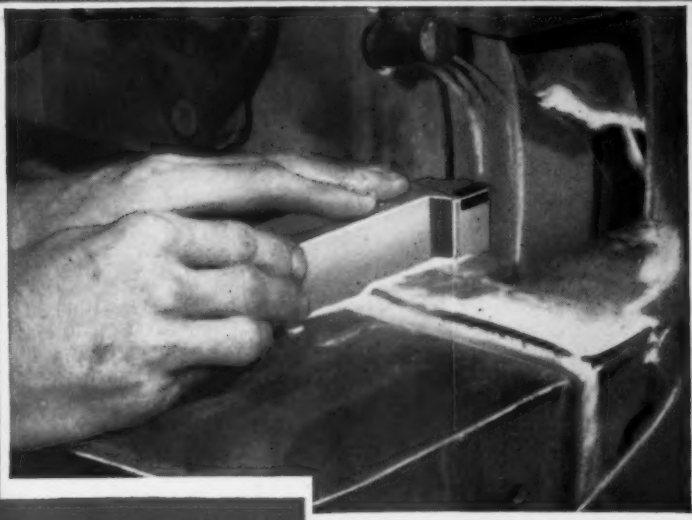
The great value of the new process, it is said, lies in the improved products, in the superior performance and reduced maintenance to be gained from uniform pipe contours both inside and out. The smooth even bend is claimed to markedly reduce or eliminate entirely erosion and eddy currents due to sudden changes in direction or to sharp-cornered fillets which act as stress raisers. And because the pipe is bent hot and slowly cooled, the stress remains uniform throughout the bend thereby minimizing the effects of stress corrosion.

The new pipe bending process may be profitably used wherever a change in direction of a pipe line over 34" in diameter is required.

(Please turn to page 232)

the grinding job

Off-hand sharpening of a carbide tipped tool, on 14" Hammond Tool Grinder. Widespread and increasing use of these tools makes this an important every day operation in many plants. Correct wheel selection for this specialized work is essential for efficient sharpening without damage to carbide tips.



the wheel

G Electrolon, GC80-I9-V3, 14" x 4" x 11", plate-mounted, Type PM, specially developed to prolong the efficiency of cemented carbide tools with economical grinding cost. Accepted as a standard of excellence throughout industry.



Borolon **Electrolon**
ALUMINUM OXIDE SILICON CARBIDE

SIMONDS
ABRASIVE CO.

PHILADELPHIA, PA.

Grinding Wheels

Available Everywhere



SIMONDS
ABRASIVE CO.

GRINDING WHEELS

where to get it

Simonds Abrasive Distributors in all principal industrial centers in the U.S. and in many foreign countries carry stocks and can advise on grinding wheel selection. Write now for Bulletin ESA-181 "G Electrolon Wheels for Carbide Tool Grinding". Also request name of nearest distributor.

Every size and shape for every grinding job . . . centerless, crankshaft, cut-off, cylindrical, internal, knife grinding, mounted points, portables, roll grinding, saw gumming, snagging, surfacing (wheels and segments), tool and cutter, bricks, sticks, stones and abrasive grain for polishing, pressure blasting, anti-slip, etc.



Simonds Abrasive Company, a major manufacturer of grinding wheels and abrasive products exclusively, maintains a modern electric furnace plant at Arvida, Canada. Here the crude abrasive used in making Simonds grinding wheels is produced. Thus, product quality is controlled from the source, assuring you of lasting performance, top efficiency, better economy when you use Simonds Abrasive wheels on your grinding jobs.

SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PENNA. • DISTRIBUTORS IN ALL PRINCIPAL CITIES

The finest of all hack saw blades... **MILFORD** **FLEXIBLE** **REZISTOR**

MILFORD FLEXIBLE REZISTOR 12" 18T
SHATTER-PROOF HIGH SPEED STEEL
EASY STARTING TEETH

**is now made
better than ever
with M-2
high speed steel**

This modern post-war steel means even more cutting... even faster cutting... for this outstanding blade which has been replacing all-hard blades with mechanics everywhere.

The same safe cutting, because it's shatter proof! The same economical cutting because there's no accidental breakage! Only the teeth are hardened... the back is tough and flexible. And the same easy cutting because of MILFORD'S exclusive Easy Starting Teeth.

This improved performance is typical of MILFORD'S continuous research, test and experiment. As better metal-cutting saw blades are made, MILFORD is making them!

Order from your mill supply distributor. He is always ready to serve your needs for all factory and mill supplies, as well as MILFORD hack saw and band saw blades.

MILFORD

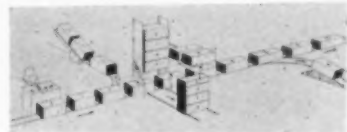
PROFILE AND
BAND SAW BLADES
REZISTOR AND DUPLY
HACK SAW BLADES

THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively for Over 70 Years
NEW HAVEN 5, CONNECTICUT, U. S. A.

MACHINE SORTS BOXES INTO INDIVIDUAL GROUPS

Containers in varying sizes, brands, grades, or colors can be systematically sorted into individual groups, regardless of their original order, by machine known as the Automatic Segregator developed by the Food Machinery Corporation, Riverside, Calif. Machine is designed for use in packing houses, canneries, postoffices, warehouses, and industrial assembly lines. Segregating is done by one operator. Boxes in



Line drawing for installation for sorting containers into 5 types.

single file are fed onto the line by conveyor, passing through control zone near receiving end. The operator makes his visual selection, pressing button controlling the automatic sorting of that particular classification, the box being diverted to its proper conveyor line, stocker or storage space. It has been used to sort 30 large, California type lemon boxes per minute.

1 1 1

SYNTHETIC ENAMEL REPLACES PORCELAIN FOR SOME USES

A new synthetic enamel finish which performs equally as well as porcelain for many types of uses has recently been developed and made available by The Sherwin-Williams Co., 101 Prospect Ave., Cleveland, O.

The new finish, called Superclad, was developed by S-W paint engineers to help solve a finishing problem which resulted from the shortage of enameling steel. The company reports that the coating already has been pressed into service for finishing aluminum washing machine tubs which one large manufacturer is using as a replacement for the standard porcelain tubs. The success with Superclad thus far indicates a broad use for this type of finish not only in the washing machine field but also on other types of appliances such as mixers and refrigerators (inner liners, evaporator doors, etc.).

Resistance to Alkalis and Acids

The finish is particularly outstanding in its resistance to alkalis and acids. Laboratory tests using a 10 percent alkali solution in one instance and a 10 percent solution of sulfuric acid in another case showed that Superclad was in good condition even after 18 months exposure while ordinary top quality enamels in the same test failed in 24 to 48 hours.

The finish has also withstood 5,000 hours of humidity test without indication of breakdown and has endured 2,000 hours of exposure to salt spray without failure. Abrasion resistance of Superclad is superior to ordinary enamel but slightly lower than that of porcelain.

The coating lends itself to baking with either infra-red or convection type equipment.



PITTSBURGH TAXIMETER CO.
reports:

WIREBOUND OVER-PACKS

*afford greater
convenience and economy*

Although most industrial users employ Wirebound Boxes or Crates as the sole shipping containers the precision-built, glass-faced products of the Pittsburgh Taximeter Co. present unusual requirements that demonstrate the versatility of Wirebounds. Seldom are taximeters bought one at a time . . . orders range from dozens to hundreds but each meter must be packed separately to protect the intricate mechanism. By adopting resilient Wirebound over-packs—which combine the strength of steel with thinner wood—Pittsburgh simplified their quantity order shipping problem by inserting four or six cartoned meters per box, reduced packing time to four minutes by one man, provided simpler more economical handling and stacking by customers, and even reduced warehouse pilferage problems. These vast shipping and receiving room economies, and safety factors are also available to you. Use the coupon below to learn more about how Wirebounds can solve *your* shipping problem.



Wirebound Over-Packs are shipped flat . . . eighty percent assembled. One man assembles box in less than three minutes.



Individually cartoned taximeters are packed into Wirebounds to provide maximum protection to sensitive mechanism and glass faces.



Five twist closures complete packing. The strength of the Wirebound permits stacking for shipping and receiving room convenience.

SIXTY WIREBOUND PLANTS
THROUGHOUT THE UNITED STATES



Wirebound
BOXES & CRATES

MAIL THIS COUPON

WIREBOUND BOX MFG. ASS'N.

Room 1821, Borland Building, Chicago 3

☐ SEND COMPLETE LITERATURE ☐ SEND A SALES ENGINEER

NAME POSITION

FIRM NAME

ADDRESS

CITY ZONE STATE

PRODUCT

no matter **what**
your business...
no matter **how**
large or small...
you operate for less
with
UARCO *business forms*

Maybe you're in manufacturing. Maybe wholesaling or retailing. It makes no difference. Doesn't most of your office payroll go for *paper work*? Aren't most of the working minutes spent writing, copying, distributing, checking, filing—some kind of business form?

Of course! And by using Uarco business forms, you reduce *every one* of these operations to the minimum—cut paper work costs to the bone. That's right ... in *any* business, large or small.

Your Uarco Representative will be glad to show you how. He'll make a complete survey to find your specific requirements. Call him in—there is no cost nor other obligation for this service.



UARCO INCORPORATED
 Chicago, Ill.; Cleveland, Ohio; Oakland, Calif.; Deep River, Conn.
 Offices in All Principal Cities.

for instance... THIS NEW UARCO "RM" REGISTER is ideal for turning out simple records on the spot. Saves endless time and bother producing handwritten forms. Forms are consecutively numbered to give you complete, accurate control. One copy is automatically filed, safe from tampering or alteration.



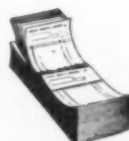
SINGLE SET FORMS



Business Forms



**CONTINUOUS-STRIP FORMS
 FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS**



**AUTOGRAPHIC REGISTERS
 AND REGISTER FORMS**

Office
Equipment and Supplies

FORMS FORUM

235

rate of usage, and present stock. *

The General Instructions and Terms and Conditions, which are a part of the purchase order contract, and appear on the back of the form, are as follows.

To Shippers in Foreign Countries—Very Important:

Certify three of these in accordance with the Canadian Customs requirements.

Mail all invoices and bills of lading direct to us at New Toronto, Ont. Show maximum cash discounts on all invoices under "Terms". Do not deduct.

On each package must be shown our order number. In each package we require a memorandum of contents, our order number and shipper's name.

Send your regular form of invoice in triplicate to us at New Toronto, Ont.

Mail all invoices and bills of lading direct to us at New Toronto, Ont. Show

Purchase requisition used by Goodyear Tire & Rubber Co. of Canada, Ltd. The prefix letter preceding number of requisition indicates the issuing department. "E" indicates engineering department.

On each package must be shown our order number. In each package we require a memorandum of contents, our order number and shipper's name.

QUANTITY. Nothing is to be shipped on this order in excess of quantity ordered or at a higher price than last quoted or charged without first advising the Purchaser and receiving confirmation that same is satisfactory.

NON-PERFORMANCE. It is hereby agreed between the parties hereto that the

PATENTS. By acceptance and consideration hereof, the Seller warrants that the articles furnished on this order do not infringe any patents; that he will defend any suit that may arise in respect thereof.

(Please turn to page 239)

The stores record sheet presents a complete stock consumption and order position for a year.

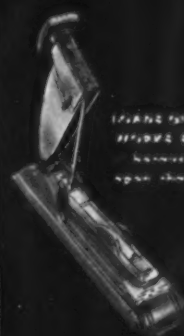
This Swingline Ad appears in the National Edition of the N. Y. Times Magazine

Now . . . add the magic of color to your desk with the famous

Swingline Stapler IN DECORATOR COLORS

It's more than a stapler — it's a colorful, decorative addition to any desk! This is the new, excitingly different Swingline Stapler in Jawollene Decorator Colors — pearl, jade, topaz or garnet — to add that extra touch of elegance and beauty to your home and office. Perfect for gifts especially for Christmas!

Has all the famous Swingline features: two Fine, large and staples — you'd be surprised how many uses it has around the house! • It loads quicker, works quicker! — because of its open channel • Chromium body protects against grit and dust, insures jam free action • Hardened steel parts, precision engineered to last a lifetime



LOADING MECHANISM
WORKS QUIETLY
because of its
open channel

Ask your dealer for the
Swingline Jawollene
Decorative and Swingline
Speedyload Stapler in the
red, white and blue package



ASK FOR JAWOLLENE AND/OR EXTRA DECADE
OR JAWOLLENE AND/OR

Patented for your satisfaction
SW 2, award also for new gift
to receive immediate action for
your Swingline Stapler or
any standard stapler



Swingline

STAPLES STAPLES

GREEN BROOKLYN COMPANY, INC., LONG ISLAND CITY 1, N. Y.



Arc welding a new Ford coupe "on the line" at Ford plant in Dearborn, Michigan.

Automobiles? Here, too, Moore cuts costs

Wherever men get down to business, Moore helps cut the cost of doing business!

Ford Motor Company, user of many types of Moore business forms, appreciates the quality of Moore products and service. And even the smallest business can benefit — because Moore offers *the right business form for every form of business*. For example: Moore recently designed — for a small Delaware company — a 4-part combined

fuel oil delivery ticket-invoice form that vastly speeded delivery and billing procedures . . . and cut costs.

Your business, too, can combine forms, eliminate writings — and save. For proof, call your local Moore office, in over 200 cities from coast to coast. Factories in Niagara Falls and Elmira, N. Y.; Minneapolis, Minn.; Denton, Tex.; Los Angeles and Emeryville, Calif. Also sales offices and factories across Canada.

MOORE 
BUSINESS FORMS
INC.

THE ONLY NATIONAL COMPANY THAT OFFERS A COMPLETE RANGE OF MODERN BUSINESS FORMS—

THE RIGHT BUSINESS FORM FOR EVERY FORM OF BUSINESS!



NEW LINE OF BOOKKEEPING
MACHINES BY REMINGTON RAND

[illegible]

The receiving report also bears letter prefix plant identification, the "N.T." on this one indicates material was received by New Toronto plant.

including a suit brought against the Purchaser on account of the purchase, sale or normal use of said articles; and that he will indemnify and save harmless the purchaser from any costs or loss which may be incurred by the assertion of any patent rights with respect to the articles furnished hereunder.

TRADE CUSTOMS. No understandings, agreements, or trade customs not expressly stated herein shall be binding on the parties in the interpretation or fulfillment hereof unless such understandings, agreements or trade customs are reduced to writing and signed by the respective parties.

ALTERATION. The conditions of this agreement are clearly set forth herein and there is no verbal agreement, contract or understanding whereby the terms and conditions are, or can be changed, varied or modified in any manner whatever. Any modification hereto shall be in writing subscribed by both parties hereto.

LAW TO BE APPLIED. Purchaser recognizes that the Seller may, for operating convenience, desire to utilize its own form of sale note in the acknowledgment of this order, or otherwise acknowledge it than by simple acceptance. Therefore, it is understood and agreed that any provisions in the form of acceptance used which modify, conflict with, or contradict any provision of this order, shall be deemed to be waived, and that the provisions of this order, by such acceptance, constitute the whole contract between the parties. It is also understood that vendor and purchaser intend and agree that the laws of the Province of Ontario shall govern the terms of any contract resulting herefrom and any of the terms hereof shall be interpreted by said laws.

RECEIVING SLIP

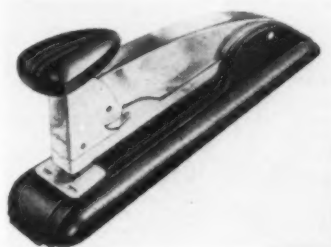
The Receiving Slip, or report, used by the various plants is numbered, and bears

letter prefix plant identification, as does the requisition. The one reproduced bears the prefix "N.T." indicating that material was received at the New Toronto plant.

Also reproduced is the Stores Record Sheet, which gives a complete record of the material covered thereby, i.e., stock on hand, usage, quantity ordered, and when scheduled, presenting a complete stock consumption and order position for a twelve months' period.

SWINGLINE STAPLERS
AVAILABLE IN COLOR

Announcement is made by the Speed Products Co., Inc., 37-18 Northern Boulevard, Long Island City, N. Y., of the adop-



Swingline staplers are now available
in four colors

tion of a color scheme for its Swingline staplers. The staplers are being produced in four jewel-tone colors, namely, jade, garnet, topaz, and pearl.

OPEN TYPE COAT RACK

"The Office Valet—Lockerette" is the tradename of open type coatrack having 12 or 18 separated hat shelf compartments and spaced hangers, as well as space for rubbers or shoes, announced by the Vogel-Peterson Co., Chicago. There are also provisions for an equal number of Lock box compartments. The Lock Box sections are furnished assembled; and the hat and shoe shelves slip into place between the locker sections. The units can be set in single rows or back to back in double rows.



All "Foremost" models are completely electrified. Model 685 computes and prints balances automatically, while the entire line provides automatic tabulation, automatic proofs, and automatic carriage return and line spacing. Front feed insertion and collation allows "one-procedure" operation.

Two, three or more related forms may be produced at one time. And many specific applications may be handled on one machine, since the operator can add, remove or reposition registers at will in a matter of seconds.

ENVELOPE AND FIVE PAGES OF
REGULAR 20 LB. STATIONERY
MEET AIR MAIL 5¢ WEIGHT

Executives have long known the virtues of regular weight letterhead paper—more strength, opacity, easier handling in typewriter, better appearance. A check-up of incoming mail in many offices shows that many companies are unknowingly sacrificing these virtues in attempting to keep within air mail limits.

"Not necessary at all to sacrifice these advantages" says Fox River Paper Corporation, Appleton, Wisconsin, in its new air mail folder that is getting widespread distribution. Its cover states:

"Even 5 Page Letters Fly For 5¢ On Regular Weight Business Stationery" The company says this means 8½" x 11" letterheads, of popular 20 pound weight, in a matching No. 10 envelope.

Since most business letters are under five pages, Fox River believes the information may "put wings" on many more regular business letters.

In addition, the folder contains a great deal of other valuable air mail information on postage rates, various classes, extra services—all U. S. Post Office approved. Copy is available for the asking.

(Please turn to page 240)

WEBER NAMED LINK-BELT PULP-PAPER REPRESENTATIVE

The Link Belt Company announces the appointment of H. F. R. Weber, as its representative to the pulp and paper industry, with headquarters at the company's Pershing Road plant, 300 West Pershing Road, Chicago. Mr. Weber has long specialized in paper mill work and has a wide acquaintanceship among paper mill operators.

PROMOTIONS ANNOUNCED BY ROYAL TYPEWRITER

Paul W. Jones, Chicago district manager, Royal Typewriter Co., has been promoted to the post of central sales manager, with headquarters at 427 Randolph Street Chicago. He formerly was Chicago district manager. Mr. Jones started with Royal as manager of its Toledo branch in 1922.



Paul W. Jones

W. W. Pennels, former manager at Albany, has been promoted to the district managership at Chicago. He has been with Royal 24 years.

William Cone, former manager at Springfield, Mass., succeeds Mr. Pennels as manager at Albany.



Wm. Cone — L. F. Gallivan

Leo F. Gallivan, former salesman at Detroit, has been named manager at Springfield.

Another promotion involves the advancement of R. W. Cotten, former Chicago salesman to the managership of the Fort Wayne branch office.

R. H. LINDBERG NAMED McBEE BUFFALO DISTRICT MANAGER

R. H. Lindberg has been appointed manager of the Buffalo district for the McBee Company, vice R. H. Wood who has transferred to Tulsa, Okla., to open a new office in that city. Mr. Lindberg was formerly connected with the company's New York office.

Levelcoat* PRINTING PAPERS



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MONTANA Billings..... Butte..... Great Falls..... Missoula.....	Carpenter Paper Company Carpenter Paper Company Carpenter Paper Company Carpenter Paper Company

NEBRASKA

Lincoln.....Carpenter Paper Company
Omaha.....Carpenter Paper Company

NEVADA

Reno.....Zellerbach Paper Company

NEW JERSEY

Newark.....J. E. Linde Paper Company

NEW MEXICO

Albuquerque.....Carpenter Paper Company

NEW YORK

Albany.....Hudson Valley Paper Company
Brooklyn.....A. Price & Son, Inc.
Buffalo.....Hubbs & Howe Company
New York.....Baldwin Paper Company, Inc.
New York.....Bulkeley, Duntan & Co., Inc.
New York.....The Canfield Paper Co.
New York.....Forest Paper Company, Inc.
New York.....J. E. Linde Paper Company
New York.....A. Price & Son, Inc.
New York.....Royal Paper Corporation
Rochester.....Paper Service, Inc.
Syracuse.....Paper Service, Inc.
Troy.....Troy Paper Corporation

NORTH CAROLINA

Charlotte.....Dillard Paper Company, Inc.
Greensboro.....Dillard Paper Company, Inc.

NORTH DAKOTA

Fargo.....Western Newspaper Union

OHIO

Akron.....The Milcraft Paper Company
Cincinnati.....The Chatfield Paper Corporation
Cleveland.....The Milcraft Paper Company
Cleveland.....The Petrequin Paper Company
Columbus.....The Scioto Paper Company
Toledo.....The Ohio & Michigan Paper Co.

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Oklahoma City.....Carpenter Paper Company
Tulsa.....Taylor Paper Company of Oklahoma

OREGON

Eugene.....Zellerbach Paper Company
Portland.....Zellerbach Paper Company

PENNSYLVANIA

Philadelphia.....Paper Merchants, Inc.
Philadelphia.....D. L. Ward Company
Pittsburgh.....The Chatfield & Woods Co. of Pa.

RHODE ISLAND

Providence.....Carter, Rice & Company Corp.

SOUTH CAROLINA

Greenville.....Dillard Paper Company, Inc.

TENNESSEE

Chattanooga.....Bond-Sanders Paper Co.
Knoxville.....Southern Paper Company, Inc.
Memphis.....Taylor Paper Company
Nashville.....Bond-Sanders Paper Co.

TEXAS

Austin.....Carpenter Paper Company
Dallas.....Carpenter Paper Company
El Paso.....Carpenter Paper Company
Fort Worth.....Carpenter Paper Company
Harlingen.....Carpenter Paper Company
Houston.....Carpenter Paper Company
Lubbock.....Carpenter Paper Company
San Antonio.....Carpenter Paper Company

UTAH

Salt Lake City.....Zellerbach Paper Company

VIRGINIA

Richmond.....Cuthorne Paper Company

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Seattle.....Zellerbach Paper Company
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Walla Walla.....Zellerbach Paper Company
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WISCONSIN

Milwaukee.....The Bower Paper Company

EXPORT AGENTS

American Paper Exports, Inc., New York, U. S. A.
Cable Address: APEXINC—New York

KIMBERLY-CLARK CORPORATION • NEENAH, WISCONSIN

122 East 42nd Street, NEW YORK 17
155 Sansome Street, SAN FRANCISCO 4

8 South Michigan Avenue, CHICAGO 3
22 Marietta Street, N. W., ATLANTA 3

*T. M. REG. U. S. PAT. OFF.

Before choosing any printing paper Look at Levelcoat*



Illustrated here is a typical use of Levelcoat*, not an actual booklet

Look at Levelcoat... for brightness

Sparkling as Arctic starlight is the clear brilliance of Levelcoat* printing paper. For the brightness of Levelcoat is more than surface deep; it begins with a skillful blend of "brightness" fibers in the very pulp itself. And with a lustrous coating of specially selected clays, Levelcoat emerges in fullest beauty.

Look at Levelcoat... for smoothness

Here's a printing surface that's as smooth as upland snow! That's because it's so uniformly coated by Kimberly-Clark's precision-controlled method... using clays that might pass as face powder, they're so soft, so clean, so flour-fine. Let the soft glow of Levelcoat papers spotlight your printed message!

Look at Levelcoat... for printability

Advertisers like Levelcoat for its printing qualities which make color sing or black type snap with contrast. Printers like its character—and the uniformity which gives trouble-free performance ream after ream, run after run. Try this beautiful paper yourself—and give your printing the Levelcoat lift.

IT PAYS TO LOOK AT LEVELCOAT



Levelcoat* printing papers are made in these grades: Trufect*, Multifect* and Rotofect*.

KIMBERLY-CLARK CORPORATION, NEENAH, WISCONSIN

*T. M. REG. U. S. PAT. OFF.

FREE OFFER

for
Purchasing
Agents



As a rule, Purchasing Agents are not "coupon clippers" . . . neither is it our policy to send samples, but . . .

AW FABER-CASTELL
ERASERSTIK

is so important to the efficiency of your typists, clerks, book-keepers and executives, that we will gladly send you one of our wood-encased eraser beauties so you can test it for every erasing need—pencil, ink or typewriting.

EraserStik is the modern way to erase. Sharpen it with knife or mechanical sharpener and in seconds you have fresh, clean eraser stock. EraserStik gets into tight places, erasing one letter of a word without smearing surrounding area. Fewer letters need re-typing when EraserStik is used. Write today for free sample.

7099 without brush 10c
7099B with brush . . . 15c

a trifling cost for greater office efficiency.

**THE FIRST, THE ORIGINAL,
THE GENUINE
WOOD-ENCASED ERASER.**

AW FABER-CASTELL
PENCIL COMPANY INC., NEWARK, N.J.

G. H. ARMSTRONG NEW VICE PRESIDENT OF ARCO COMPANY

Glendon H. Armstrong has become associated with the Arco Manifold Company, New York, N. Y., as vice president. He was formerly president of the Commercial Forms Corporation, and prior to the organization of that company was associated with the International Business Machines Corporation for many years in various executive positions.

L. L. BROWN PAPER CO. ISSUES NEW CATALOG

Issuance of a new catalog and price list is announced by the L. L. Brown Paper Company, Adams, Mass. The catalog is loose-leaf, page size 8½ x 11", and is divided into sections relating to stock, items, and other factors. Copy is available upon request.

McBEE OPENS NEW OFFICE IN HAMILTON, ONT.

Sales expansion plans of the McBee Company, Ltd., Montreal, continue with the announcement by W. D. Munro, general manager, of the opening of a new office in Hamilton, Ontario. The new territory will cover the industrial area of Hamilton, London and the Niagara Peninsula.

Paul McKenzie, a native of Toronto, has been named manager. Mr. McKenzie joined McBee in 1947 after several years' experience in cost and general accounting work. He was assigned to the Toronto sales staff, a position he filled until his recent promotion. McKenzie was a Radar Officer with the Royal Canadian Air Force and saw two years' service in England.

McBee are manufacturers of special accounting methods and equipment. Besides the plant in Montreal, an American affiliate operates plants in Athens, Ohio; St. Louis and Los Angeles, with general sales offices in New York City.

NEW APPOINTMENTS ANNOUNCED BY ST. REGIS PAPER CO.

Roy K. Ferguson, president of the St. Regis Paper Company, announces the appointment of Fred C. Goodwill as resident manager of the Kalamazoo mill of the company.

John H. Heuer, the announcement states, will succeed Mr. Goodwill as technical director of the Central Laboratory of the company at Deferiet, N. Y.

Peter J. Massey, hitherto resident manager of the company's Kalamazoo mill, has been appointed chairman of the company's New Products Development Committee and will have his headquarters in New York City, according to Mr. Ferguson.

**YOU WILL FIND NEW
SUPPLY-SOURCES LISTED
EVERY MONTH IN
PURCHASING'S CLASSIFIED
SECTION! SEE PAGE 358**

NEW EASE

STENCILS NOW
ON AND OFF
IN SECONDS

NEW

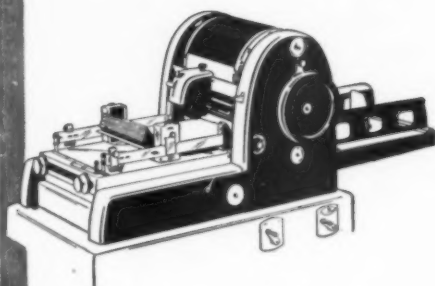
"400" SERIES

A. B. DICK

MIMEOGRAPHS

with

Flexamatic Control



Flexamatic Control, the latest advance in mimeographing, gives you a brand new positive yet flexible control of paper, ink and copy.

Ask for a demonstration. See for yourself how much faster and easier your duplicating operation can be made with the new "400" Series A. B. Dick mimeographs. For use with all makes of suitable stencil duplicating products. There is a nearby A. B. Dick branch or distributor—listed in the phone book—ready to serve you. Or write for information.

A. B. Dick Company,
720 West Jackson Boulevard,
Chicago 6, Illinois.
The Mimeograph Company,
Ltd., Toronto, Canada.

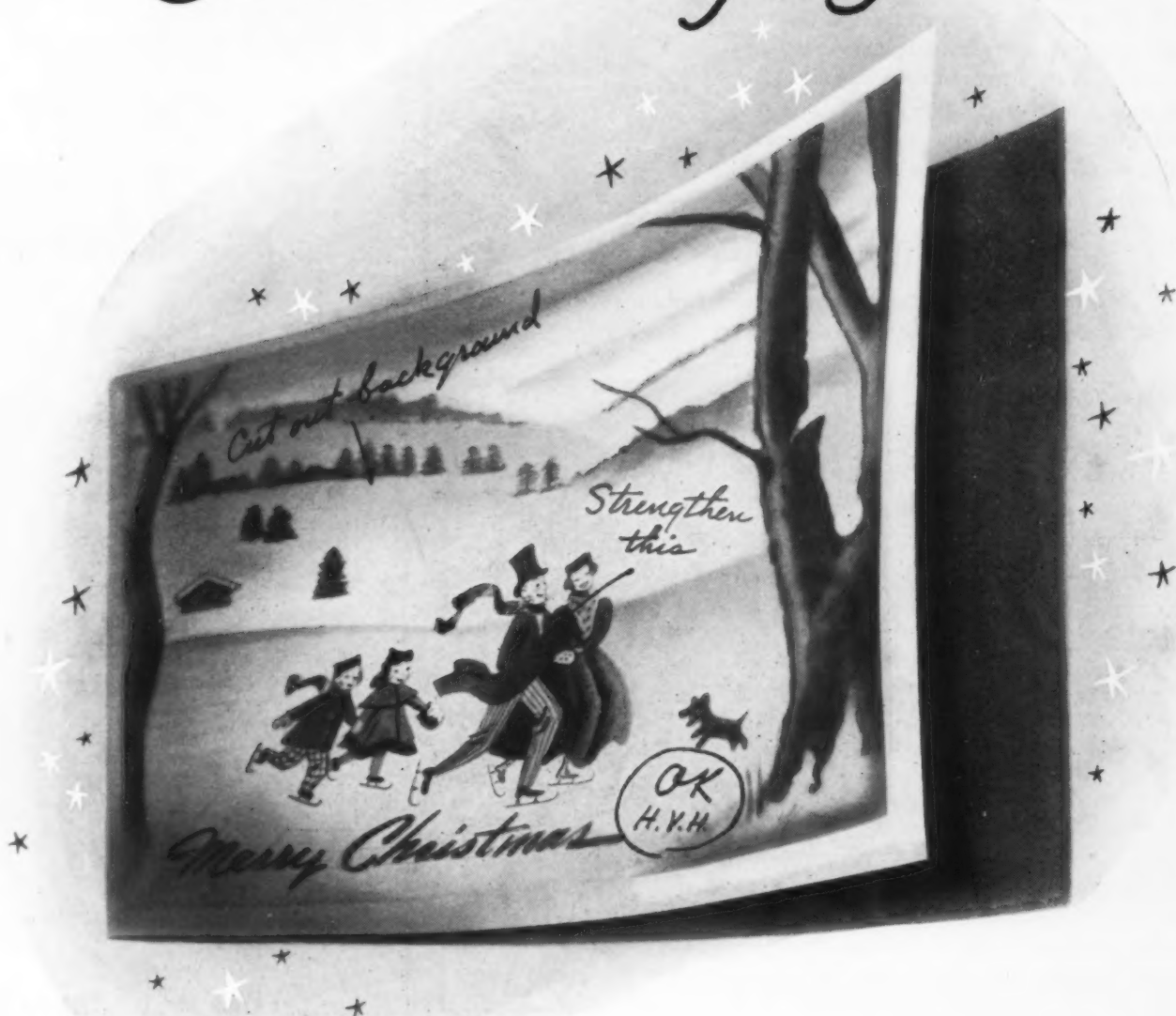
A. B. DICK



"the oldest name
in mimeographing"

bring your
layouts to life: print on

Ticonderoga Text



This versatile watermarked International paper extends the warmest, brightest greetings
of the season. Use Ticonderoga Text for letterpress, offset, gravure or photo-gelatin printing.

With any process, it gives a distinction you'd expect only in much higher-priced papers!

In laid and wove finishes, deckle or plain edge. Seven attractive colors, cream white and
brilliant white. International Paper Company, 220 East 42nd Street, N. Y. 17, N. Y.

INTERNATIONAL PAPERS



for Printing and Converting

GET A MORTGAGE PAPER THAT *Pays Off*

High opacity is one of the most important qualities a mortgage paper can have. It makes reading easy. It lends importance to a document...

Ask your printer—the expert... For mortgages or other documents super opaque Rising Parchment pays off in the quality impression it creates for your organization.



Rising Parchment

- ✓ 100% rag
- ✓ super opaque
- ✓ 6 standard sizes of envelopes
- ✓ distinctive unglazed parchment finish
- ✓ four weights



WHEN YOU WANT TO KNOW... GO TO AN EXPERT!

Rising Papers

ASK YOUR PRINTER... HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

NOW!

Save Time -- Save Money

With

SnapEasy

ONE-TIME CARBON INTERLEAVED FORMS

Consolidate your various forms for one typing! Use of Snapeasy one-time carbon interleaved forms saves typists' time, eliminates error, simplifies by standardizing, insures legibility, and speeds up office routine. We willingly adapt Snapeasy forms to your own needs. No "minimum order" is necessary. Send us your forms for advice and an estimate — today!

- EFFICIENT
- ECONOMICAL
- PROMPT DELIVERY

Write Dept. P-2



The ARTHUR J. GAVRIN PRESS, Inc.

50 WEBSTER AVENUE • NEW ROCHELLE, N. Y.

FREE FOLDERS ON OFFICE ROUTINE SYSTEMS

Ditto, Inc., 2245 West Harrison St., Chicago, announces the publication of ten four-page folders, each describing one office routine system and telling how the system can be solved quickly, accurately, and at low cost. It is stated that the folders will prove of interest to anyone who has payroll, order-billing, factory production order, purchasing, time payment and general accounting problems. They are available for the asking.

1 1 1

NEW LETTER-OPENING MACHINE FOR LIGHT VOLUME MAIL

MailOpener is the name of a new desk model letter-opening machine, being introduced by Pitney-Bowes, Inc., Stamford, Conn. Especially designed for small offices with relatively light incoming mail, the new device brings to the smaller office the same advantages that high-speed, automatic letter-opening machines have given of-fices having large volumes of mail. Upon



Upon pressing the lever, a guarded blade trims off the envelope edge.

pressing a lever, a guarded spiral cutting blade trims off a thread-like envelope edge, shearing open the mail as fast as it can be fed. A self-adjusting guard roller takes mail of practically any size or thickness. The housing is an aluminum alloy die casting, mounting a cutting blade and shear plate of precision ground steel. It is 16 1/4" x 3 3/4" x 2 3/4" high, and weighs about eight pounds.

1 1 1

PLUG-IN STRIP FOR ELECTRICAL OFFICE EQUIPMENT

By providing a spread of electrical outlets at either 6" or 18" intervals along the baseboard or chair-rail molding of offices a new plug-in strip announced by the National Electrical Products Corp., Chamber of Commerce Building, Pittsburgh, Pa., gives maximum opportunity to "plug-in" business machines, desk lamps, etc., and eliminates the need for extension cords.

The installation is made by joining either 3 ft. or 6 ft. standard lengths of Plug-In strip. The steel channel and the two No. 12 copper wire conductors, "factory-wired" inside the raceway are easily cut to fit the job. Ten matching fittings are also available, including interior, exterior and flat elbows; center and end feeds, and "fill-in" strips for hard-to-fit places.

(Please turn to page 246)

ADD MPH*



To Your Business!

*More
Productive
Hours



with an **UNDERWOOD SUNDSTRAND** Adding - Figuring Machine

GET your totals . . . your basic facts . . . faster with an Underwood Sundstrand Adding-Figuring Machine.

For this machine is equipped with the **world's fastest** keyboard. Notice, there are only 10 figuring keys . . . concentrated under the finger tips of one hand.

Even untrained operators acquire a swift, sure "touch" method after just a few minutes' practice. And, because their fingers *know* this keyboard, operators keep their eyes on their work. No distracting head swinging from work sheets back to machine.

Fingers ripple smoothly . . . quickly setting up numerals, producing totals, sub-totals, and credit balances. You get accuracy and save precious min-

utes . . . minutes that add up to *More Productive Hours*.

You'll be delighted with the versatility of Underwood Sundstrand Adding-Figuring Machines. The Portable Electric model shown here will *add, subtract, multiply, and divide*.

Call your nearest Underwood representative for a full demonstration today!



Underwood Corporation

Adding Machines . . . Accounting Machines . . . Typewriters . . .
Carbon Paper . . . Ribbons and other Supplies
One Park Avenue New York 16, N. Y.
Underwood Limited, 135 Victoria Street, Toronto 1, Canada

Sales and Service Everywhere

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MacRae's Blue Book

The Complete Buying Guide for Every Industrial Product — All in ONE BOOK



MacRAE'S BLUE BOOK is handy — efficient — accurate — more accessible — more manageable. Over 75,000 copies are in constant use every day.

56th edition closing. For advertising rates call your agency or write to MacRAE'S BLUE BOOK Co. 18 E. Huron Street, Chicago 11, Ill.

Old Town

RIBBONS
CARBONS
Duplicating
Supplies

For those
who prefer the best

BROOKLYN 17, N. Y.

Columbian
string and button —
originated by U. S. E.
in 1875.

One of many
envelope improvements
pioneered by U. S. E.

UNITED STATES ENVELOPE CO.
Springfield 2, Mass.



13 MANUFACTURING DIVISIONS
LOCATED FROM COAST TO COAST

See your Printer or Paper Merchant

(Continued from page 244)

The Plug-In strip can be mounted either flush with, or on the top surface of moldings, tables or counters. A hollow steel quarter-round known as Lopo-Trim, a raceway for bell, buzzer or signal low potential wiring is also available.



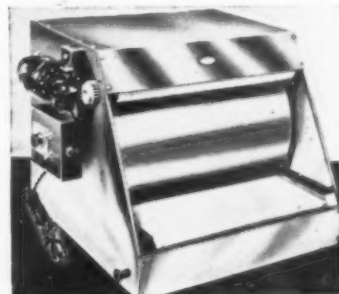
The Plug-In strip provides adequate spread of outlets for clock, lamp and business machines

The receptacles have phosphor-bronze spring contact clips which make full mechanical contact with the plug prongs. When joining lengths of Plug-In strip a copper connector is crimped over the wire ends, eliminating soldered and screwed connections.

1 1 1

DRYER FOR PHOTOSTATS, BLUE-PRINTS, PHOTOS, ETC.

An electrically driven drum dryer with variable speed drive for photographic prints, photostats and blueprints, is announced by Fedco Products, 37 Murray Street, New York, N. Y. The dryer occupies 18" x 18" of table space and is 15" high. It will take up to forty 11 x 14



prints per hour. The device is equipped with a heavy duty variable speed fan-cooled a-c d-c motor. The cloth belt is replaceable, washable, self tightening, and self-aligning.

1 1 1

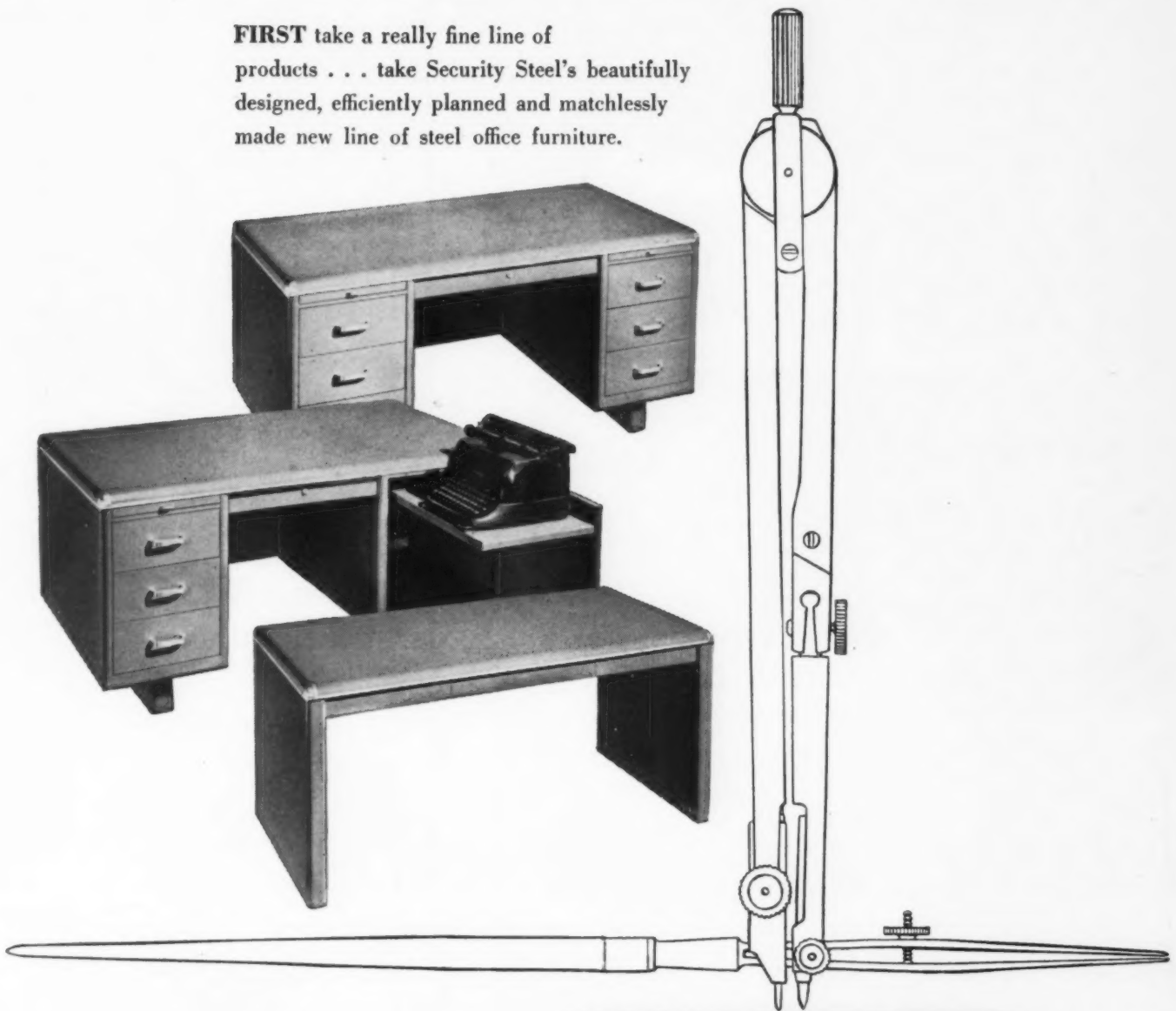
AIR PARCEL POST SEALING TAPE

Special gummed sealing tape, printed in red and blue, for air parcel post, is announced by the Mid-States Gummed Paper Co., Chicago, Ill. The tape has been approved by the Post Office department for domestic and overseas mailings, and enables ready compliance with the regulation that parcels shall be marked for air parcel post on all four sides.

(Please turn to page 248)

HOW TO CREATE A *BRAND* NAME

FIRST take a really fine line of products . . . take Security Steel's beautifully designed, efficiently planned and matchlessly made new line of steel office furniture.



TO THAT FINE LINE add the distinctive name **CRESTLINE**, which stands for top quality. Wrap up the name in an attractive blue-gray label so the consumer will immediately know that he is buying the finest furniture on the market . . . furniture bearing the **CRESTLINE** Label.



SECURITY STEEL EQUIPMENT CORPORATION, AVENEL, NEW JERSEY

**YOU CAN SEE
THE EXTRA VALUE**

Your own eyes are all you need to prove the extra value of Webster's Micrometric Carbon Paper. A scale, actually a part of each sheet, helps secretaries do neater, faster work. The scale warns them as they approach the bottom of the page, assures well-spaced letters and reports at the first typing.

Micrometric has national acceptance by secretaries and office managers in modern offices everywhere. It's available in a variety of weights and sizes. When you buy with an eye for top performance, remember that the Webster line includes carbon papers and typewriter ribbons, both cotton and silk; duplicating carbon papers and accessories; ribbons and carbons for Elliott-Fisher, Addressing, and International Business Machines. Write to F. S. Webster Company, 7 Amherst Street, Cambridge 42, Massachusetts — or contact our warehouse in any one of the cities below.

WEBSTER'S

Typewriter Ribbons and Micrometric Carbon Papers

Webster's warehouses in key cities from coast to coast:
New York, Philadelphia, Pittsburgh, Detroit, Chicago, San Francisco, Cambridge

ALLEN ANNOUNCES TWO PORTABLE ADDING MACHINES

Announcement of two new portable adding machines is made by the R. C. Allen Business Machines, Inc., Grand Rapids, Mich. One of them is known as the Model 60. It is a small machine, designed primarily for the smaller businesses. It has visible dials, two-color ribbon to print totals and sub-totals in red; automatic keyboard clearance; repeat and correction keys, and flexible keyboard. It has an adding and listing capacity of 9,999.99. It is hand operated.



Allen Company's new portable adding machine.

Model 75 incorporates a 4½" carriage which makes it adaptable for writing statement and deposit slips and inventory accounting in addition to general adding and subtracting. Standard operating features include visible dials, automatic clear signal, direct subtraction printed in red, correction key for keyboard clearance, repeat key, total and sub-total mechanisms. It is hand operated and has an adding and listing capacity of 99,999.99.

ADAPTABLE PLASTIC CONTOUR CHAIR

One of the largest items to be produced in plastic by pressure molding from steel dies, a new plastic contour chair is now in production by the General American Transportation Corp., 133 LaSalle St.,



One of many types of undercarriage for contour chair.

Chicago, Ill. Designed after an exhaustive survey into sitting habits and needs it is made of sisal impregnated with phenolic resin and is proof against alcohol and cigarette burns.

The one-piece plastic seat and back may be fitted with any desired type of undercarriage. It may be used in offices, hotels, restaurants and theatres, and may be adapted as a seat for tractors and other automotive vehicles.

"Correct!"



"Correct!"



No matter who says it...

...the Perfect Answer is "Correct!"

It's correct to stop when the school bus stops—even in the opposite direction. And it's correct to follow established custom with your letterhead, so you'll invariably be *sure*. *Correct Bond* is eminently correct for business letterheads—rag content and air dried, its brilliance, its sharp, clear crackle and finer feel combine to give it evident superiority. It's correct for typing, correct for printing, too—as your secretary and printer will agree. . . . This time, say "Print it on *Correct*." Write for samples—available in white and nine brilliant colors with envelopes to match.

HOWARD PAPER MILLS, Inc. • AETNA PAPER COMPANY DIVISION • DAYTON, OHIO

Correct Bond

Rag Content

WHEREVER THE PRINTED WORD MUST TRULY REPRESENT YOU



THIN PAPERS

Reduce

TYPING, MAILING
and FILING COSTS

Use

ESLEECK

THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

NEW WHITEPRINTER ANNOUNCED BY BRUNING

The Charles Bruning Co., 4754 Montrose Ave., Chicago 41, Ill., makes announcement of its new Model 21 BW Whiteprinter. Intended for moderate volume print production, the new machine



Bruning Company's Model 21
Whiteprinter.

will reproduce engineering drawings in ink or pencil and printed or typewritten office forms from translucent or transparent original material. It is continuous in operation and exposes and develops cut sheets or roll stock up to 42 inches in width—any length. Printing speed ranges from 6" to 4' per minute, depending upon the transparency of the original. One op-

erator can produce more than 3000 8½ x 11 whiteprints per day. The model requires no plumbing connections or exhaust ducts, and can be installed anywhere electric outlets are available.

It exposes and develops regular BW papers—light, medium and card-weight, on which can be developed black, blue, red, or brown lines on white backgrounds. Green, pink, or yellow tinted papers can also be exposed on which can be developed black, blue, red or brown lines.

1 1 1

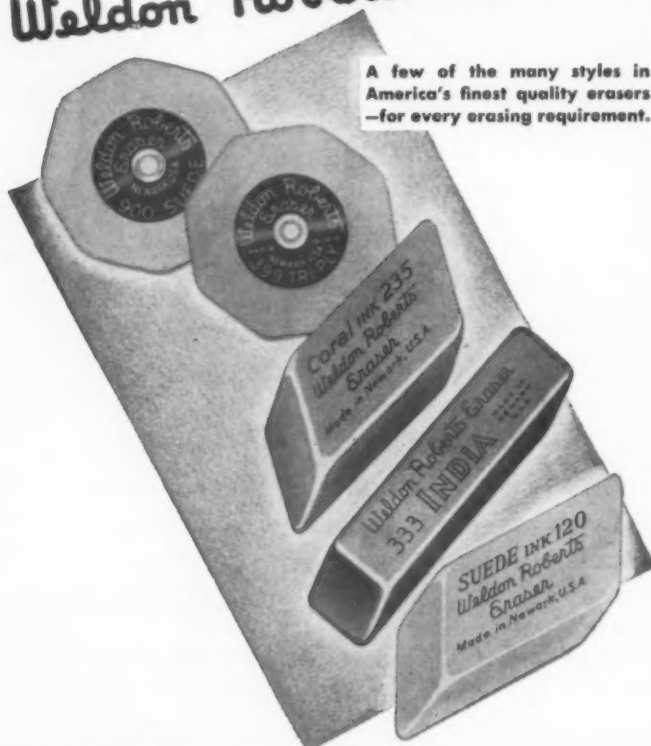
GATHERING MACHINE GATHERS 7000 SHEETS PER HOUR

New streamlined gathering machine announced by the Evans Specialty Co., 407 N. Munford Street, Richmond, Va., is said to have capacity for gathering 7000 sheets per hour with one operator, and it is stated that sheets can be fed fast enough to keep two operators busy gathering 14,000 sheets per hour.

Important Features of Machine

According to the manufacturer as many as 500 sheets of paper can be loaded on each of eight shelves, and by pressing foot pedal or hand lever, the sheets slide down individual chutes to the bottom into complete assembly. Any size sheets from 3 x 5 to 12 x 17 inches can be assembled on the machine, and papers of different weights can be handled simultaneously. Printed matter describing the machine is available.

Weldon Roberts Erasers




A few of the many styles in
America's finest quality erasers
—for every erasing requirement.

WELDON ROBERTS RUBBER COMPANY
Newark 7, New Jersey

They Correct Mistakes in Any Language

Fine Diamonds



Selections sent for inspection
without obligation.

L. & C. MAYERS CO.

Diamond Merchants since 1912
545 FIFTH AVENUE, NEW YORK 17, N.Y.

MODERN OFFICE LIGHTING

The accompanying illustrations show modern lighting in the new offices of The Best Foods, Inc., New York City, designed by engineers of the Sylvania Electric Products, Inc. The upper picture shows a combination of recessed fluorescent lamps



Efficient illumination for desk work also provides a relaxed atmosphere in the executive headquarters offices.

which follow the perimeter of the room and table lamps with indirect type incandescent bulbs in the executive offices. The lighting consists of a double row of single lamp CS 140 and CS 120 fluorescent utility strip lighting fixtures mounted end to end which extend several feet out from the walls. Each row is on an individual circuit so that two intensities of lighting are available. Daylight from the windows behind the desk is sufficient to eliminate the need for extra lighting over the desk itself.



Light color desk tops, walls, and floor covering permit maximum reflection of light in private offices.

The second illustration is of a group of glass-partitioned private offices. The same high level of illumination is achieved in the walled offices and open work areas. The fluorescent lighting fixtures extend down the length of the area in two continuous rows over the partitions so that they provide a uniform quality of illumination throughout the entire area and a high level of light in each office. Another row of fixtures (foreground) furnishes the same high intensity lighting on desks and filing cabinets of the small open area. Lighting is from two-lamp louvered CS-240 fluorescent fixtures.

**LOOKING FOR SOMETHING?
PUT A "WANTED" AD IN
PURCHASING'S CLASSIFIED
SECTION
SEE PAGE 358**



AMAZING NEW *Automatic* **SOUNDERASER**

Patents Pending

**DISCS CAN BE USED 26 TIMES AND MORE
... SAVINGS UP TO 75% ... ECONOMY
NEVER BEFORE KNOWN IN OFFICE DICTATION**

gives
SoundScriber
Plastic Discs
MORE LIVES
THAN
THE OFFICE
CAT!

The automatic SoundEraser repeatedly erases sound-grooves from your used dictation discs—makes them ready for instant re-use in less than 30 seconds. SoundScriber already offers the lowest over-all costs in office dictation. Now with SoundEraser, its leadership in service to business and the professions is again demonstrated.

Write today for facts and figures on the savings you make with SoundScriber and SoundEraser. Just ask for the booklet, "This Beats Me!" Address The SoundScriber Corporation, Dept. P-11, New Haven 4, Connecticut.

SOUND SCRIBER

Trade Mark

**ELECTRONIC DISC DICTATING EQUIPMENT
220 SALES AND SERVICE CENTERS... COAST TO COAST**



Among the ASSOCIATIONS

N.A.P.A. Announces Rules for Boffey Memorial Award Students' Contest for 1949

THE National Association of Purchasing Agents has announced the rules for its annual Boffey Memorial Award Students' Contest for the best manuscripts on purchasing prepared by qualified students. The contest commemorates the contributions of L. F. Boffey to the purchasing profession.

Details of the contest, which closes on July 1, 1949, are now being distributed to all of the instructors in all of the schools which include the subject of Industrial Purchasing either as a separate course or as a part of another course in business administration. Six prizes of \$100.00 each are offered.

Rules governing the competition are as follows:

Subject

1. All manuscripts must deal with the subject of Purchasing or a specific phase of purchasing for industrial, governmental or educational institutions. This excludes buying for resale, as well as the purchase of intangibles such as insurance, etc.

Those Eligible To Compete

2. The competition is open only to regularly enrolled, full-time students in any recognized college or university having a School of Commerce or a College of Business Administration. A competitor shall enter a manuscript in only *one* of the following groups:

Group A—Manuscripts prepared by undergraduate students.

Group B—Manuscripts prepared by graduate students in business administration.

Members of the N.A.P.A. and those eligible for membership may not qualify.

Time of Competition

3. Manuscripts must be placed in the office of the National Association of Purchasing Agents, either by messenger or by registered first class mail, not later than noon on July 1, 1949.

Awards and Prizes

4. The Boffey Memorial Students' Contest Committee will appoint competent judges who shall be members of the N.A.P.A., and their decisions shall be final. These judges will award, prior to December 31, 1949, three prizes of one hundred dollars each (\$100.00) in Group A, and three more of one hundred dollars each (\$100.00) in Group B, to the authors of the manuscripts which in the opinion

of the judges are the best of those submitted in their respective groups when judged from the standpoint of the "Rules for Judging" shown below.

Rules for Judging

5. All committees, whether preliminary or final, will judge each paper upon the following bases:

Originality of thought (70 points). Emphasis will be placed upon:

(a) Originality of thought or novelty of thought in discussing the purchasing function, or a subject related directly to it.

(b) The use of source material obtained outside of textbooks and classrooms, as contrasted with the mere compilation of facts, or the mere restatement of the opinions of others.

(c) Evidence that independent study and research have been utilized.

The decision on the merits of a paper is to be entirely separate from the ques-

tion of whether or not the particular judge agrees with the conclusions reached. In other words, if a student starts out with a definite hypothesis, presents convincing arguments, and reaches a logical conclusion, such paper will be given a good rating regardless of whether the conclusion fits in with the theories or dogmas of the judge.

Organization and presentation (20 points). There should be:

A logical development of the theme of the paper, so organized that the reader may easily follow the line of reasoning.

Aptness in illustration and in method of presenting charts and data.

Purely expository papers in the nature of descriptions of function or method should not be submitted. However, such papers will be considered eligible if arguments for or against a procedure or method are included as a basic part of subject development. The dual nature of subjects presented should be recognized by: presentation of evidence both pro and con; a careful weighing of the arguments presented; a clear statement of the conclusions based upon the arguments presented.

(Please turn to page 257)

Pacific Intermountain Conference Draws Record Attendance at Los Angeles

The third annual Pacific-Intermountain Purchasing Agents' Conference was held at the Biltmore Hotel, Los Angeles, Calif., on September 24 and 25. The conference scored a record attendance of members



Harold Cake, Vice President for District One, was a conference speaker.

from participating associations—the Purchasing Agents Association of Northern California, the Purchasing Agents Association of Los Angeles and the Purchasing Agents Association of Utah.

The conference opened with an official luncheon meeting on Friday, at which Burt M. Pulver, Barker Bros. Corp., and

president of the Los Angeles association delivered the welcoming address. He introduced conference chairman General Wayne R. Allen, chief administrative officer and purchasing agent for Los Angeles County, who gave the keynote address.

Other talks at the opening session were: "The World Economics of Oil" by R. L. Minckler, president of General Petroleum Corp.; and "The Impact of the Defense Program" by Lt. Gen. LeRoy Lutes, U.S.A., executive director of the Munitions Board.

The midafternoon session was devoted to a panel discussion of "The Impact of the E.R.P. and Armament Programs on Specific Materials, Markets and Prices". Leaders of the discussion were: Bernard E. Gobel, Consolidated Western Steel Co., San Francisco, on iron, steel, castings, forgings and pipe; William C. Allen, Utah Power & Light Co., Salt Lake City, on lumber and construction materials; Charles A. Keeble, Union Pacific Railroad Co., Los Angeles, on petroleum and fuels; John V. Naish, factory manager, Northrop Aircraft, Inc., Hawthorne, tools, parts, motors and subassemblies; and

(Please turn to page 258)

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TWENTY-THIRD ANNUAL CANADIAN CONFERENCE HELD IN MONTREAL

The 23rd annual Canadian Purchasing Agents Conference was held on Friday and Saturday, October 15 and 16, in the Mount Royal Hotel, Montreal, Can., under the auspices of the Council of Canadian Purchasing Agents Associations. The meeting was arranged and conducted by the Purchasing Agents Association of Montreal.

The first morning session, under the chairmanship of C. E. Stiles, purchasing agent of the Canadian Broadcasting Corporation and president of the Montreal association, opened with remarks by J. Bruce Jordan, general conference chairman, general purchasing agent of the National Drug and Chemical Co. of Canada Ltd. Following an address of welcome by His Worship, Mayor Camillien Houde, C.B.E., the following talks were given: H. D. Carlan, president of Council of Canadian Purchasing Agents Association, vice-president, N.A.P.A., purchasing agent, Building Products Co. Ltd., on "Canadian Council and National Activities"; G. M. Young, technical division, the Aluminum Company of Canada Ltd., on "Aluminum"; E. B. Conley, purchasing agent, wire and cable division, Northern Electric Co. Ltd., on "Inventory Controls"; and J. A. Retty, Ph.D., chief geologist, Hollinger North Shore Exploration Co. Ltd., and Labrador Mining and Exploration Co. Ltd., on "Iron Ore Developments in Quebec and Labrador".

Luncheon Session

At the luncheon session, held on the Normandie Roof, the principal speaker was N.A.P.A. president, Ralph O. Keefer, who spoke on "Our Professional Obligations". B. K. Sprung, president, Purchasing Agents Association of Winnipeg; purchasing agent of Manitoba Power Commission, was chairman.

The afternoon session on Friday was presided over by H. F. Witton, president, Purchasing Agents Association of Hamilton; purchasing agent, N. Slater Company Ltd. Addresses included those of: Fred T. Parker, manager traffic and customs department of Canadian Industries Ltd. on "Your Traffic Problems"; Robert F. Legget, M.E.I.C., director, National Research Council, Ottawa, on "Building Research in Canada"; and John Crawford, supervisor, building and equipment, Sun Life Assurance Company of Canada, on "Educating Future P.A.'s".

A smoker, held on Friday evening in the hotel ball room, was under the direction of Hedley H. Vautier, Canadair Ltd., chairman of the entertainment committee.

Addresses at the Saturday morning session, under the chairmanship of G. A. Davis, president, Purchasing Agents Association of Toronto, included those of George A. Renard, executive secretary-treasurer, N.A.P.A., on "From One P.A. to Another"; and W. T. Wilson, deputy chairman of Wartime Prices and Trade Board, Department of Finance, Ottawa, on "Canada's Emergency Control Problem".

Following a luncheon on the Normandie Roof at noon, at which H. A. Cole, president, Purchasing Agents Association of Essex-Kent and District; purchasing agent,

Bendix-Eclipse of Canada Ltd. was chairman the group went on a Laurentian Mountains sightseeing tour to Alpine Inn, Ste. Marguerite. The tour was under the direction of James Barnes, chairman, special features committee; purchasing agent, Darling Bros. Ltd.

Guest of honor at the closing banquet, held Saturday evening in the hotel ball room, was R. Keith Jopson, O.B.E., Economic Adviser to the United Kingdom High Commissioner at Ottawa and Senior United Kingdom Trade Commissioner for Canada. J. Bruce Jordan presided at the banquet.

1 1 1

OREGON ASSOCIATION PROGRAM FEATURES EDUCATIONAL WORK

The Purchasing Agents Association of Oregon, headed by President R. P. Stockwell, General Construction Company, Portland, has embarked on a year in which educational and public relations work will be stressed. Featured throughout the year will be such activities as a public speaking course for members, joint meetings with other professional groups, nine weekly



Don Woodman

luncheon programs and six monthly dinner meeting programs all devoted to educational topics, and a college student manuscript-writing contest on purchasing which offers two \$100 scholarships.

The Oregon group, now grown to 135 members, has engaged a full-time executive secretary and managing editor for the association's magazine, the "Oregon Purchasing News". Appointment of Don Woodman, former long-time member of the editorial staff of the "Portland Oregonian," to the secretary-editor post was made recently.

Special events arranged for the coming season by the program committee include a tentative meeting on Monday evening, November 15, with the area's organized sales managers, and the annual Christmas party on December 20.

The January 17 meeting will feature "Purchasing As Outlined to the College Student", presented by the two non-member advisors to the committee on education, A. B. Peterschmidt, dean of the college of business, University of Portland, and Prof. P. S. McAlister of Lewis & Clark College.

The annual election of officers will take place at the May 16 meeting, which will also feature an educational program. Past Presidents' Night will be held at the June 20 meeting.

R. C. SWANTON GUEST SPEAKER AT ST. LOUIS ASSN. MEETING

The first fall meeting of the Purchasing Agents Association of St. Louis was held on Tuesday evening, September 28 at the Sheraton Hotel. Robert C. Swanton, Chairman of the Business Survey Committee and past president of the National Association of Purchasing Agents, was the guest speaker. The title of his talk was "A Purchasing Executive's Viewpoint of Business Trends and Price Movements".

The regular commodity discussion was led by D. M. Baker, chairman of the commodity committee, and Grant C. Garbee, Producers Creamery Company. The open forum, held immediately preceding the main meeting, was presided over by Warren J. Matthews and Walter J. Wallace, and had as a subject "Why Purchasing Education?"

Program for the Year

The complete program of educational forums and plant visits for the coming year has been announced as follows:

November—Two forums, one plant visit. Policy and management—"To Whom Should the Purchasing Agent Report and Why?"; procedure and organization—"Quality Control-Standardization-Specification". Plant visit—luncheon and afternoon visit.

December—Special meeting. Film on purchasing or related subject. Talk by Prof. Sam Marsh, Washington University, "What is Wrong With Purchasing Agents?"

January—Two forums. Procedure and organization—"Branch Plant Purchasing and Centralized Purchasing". Forms and records—Purchase Order and Receiving Tickets.

February—Two forums. Procedure and organization—"Buying the Right Quality—Right Quantity—Right Price". Plant visits and visual education—Film on purchasing or manufacturing process.

March—Two forums. Policy and management—"Purchasing and Management" (organization). Forms and records—Commodity records.

April—Two forums. Procedure and organization—Salesmen Relations, Selecting Source of Supply, Relationships With Suppliers. Forms and records—Purchasing Department Manual.

May—Two forums, plant visit. Procedure and organization—"Legal Aspects of Purchasing". Forms and records—Purchasing department reports. Plant visit—luncheon, afternoon visit.

Guest speaker at the October 19 meeting, held in the Sheraton Hotel, was Harold K. Rowe, author of the LaSalle Washington letter, entitled "Report from the Capital". His subject was "Washington Today". Mr. Howe, Washington representative of La Salle Steel Company, gave his viewpoints on activities in the nation's capital, and conducted a question and answer period following the address.

Prior to the general meeting, there were two educational forums on "The Purchasing Function and Ethics of Purchasing" and "Requisitions".

(Please turn to page 257)

K&M "Century" Asbestos Corrugated

for long life without maintenance...



The "new" roof on this industrial building is actually more than 3 decades old! A coal operator installed these "Century" Asbestos Corrugated sheets on a coal tipple 33 years ago before he re-used them here.

for modern architectural effect...

Beauty in typically modern style is brought to this store with a facade of "Century" Asbestos Corrugated. This beauty will last without any painting or other expensive upkeep.



You've probably noticed that "Century" Asbestos Corrugated is growing in popularity for decorative motifs...inside and outside...for industrial plants, stores, restaurants, theaters. There's a rugged attractiveness in the simplicity of the corrugations and neutral light-gray coloring.

And perhaps it's no news to you that "Century" Asbestos Corrugated is thoroughly practical from the structural point of view. It actually toughens with age. Never needs to be painted. Can't rot, corrode, catch fire, or succumb to termites.

NEW "TOP-SIDE" FASTENERS CUT ROOFING COSTS

On top of all this, you can specify the new "TOP-SIDE" Fasteners, and cut a big slice off the cost of roof installation over steel purlin construction. Exclusive with "Century" Asbestos Corrugated, these new fasteners permit roofing to be done entirely from atop the roof...eliminating entirely the costly labor and scaffolding normally required beneath. This feature, alone, is worth looking into—write us for full details.

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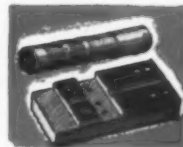
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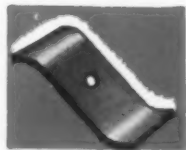
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—Sheets of Textolite laminated plastics are custom formed into simple shapes by this very inexpensive method.

RULES FOR STUDENTS' CONTEST

(Continued from page 252)

The source of all data used should be clearly indicated by proper notations on charts or tables; quotations from published sources, or ideas obtained from others, should be acknowledged by appropriate footnotes. It is not sufficient to append a bibliography; specific textual or footnote references should be used throughout the manuscript.

English and composition (10 points). Emphasis should be placed upon correct spelling and punctuation; proper sentence and paragraph structure.

Form of Manuscripts

6. Each manuscript must be typed on one side of the sheet, double spaced on white paper $8\frac{1}{2} \times 11$ inches. Its length shall not exceed fifty pages, including charts and forms.

7. Each competitor must inscribe his manuscript with an assumed name and the group in which the manuscript is entered, and, in an accompanying plain, sealed envelope, addressed to the Secretary of the National Association of Purchasing Agents, 11 Park Place, New York 7, N. Y., give his real name, school and home address, school status as an undergraduate or graduate student of business administration at the time the article was prepared. The accompanying envelope must be identified as belonging to the manuscript, by the inscription of the assumed name on the outside of the sealed envelope.

Manuscripts will be excluded if they do not comply fully with the rules governing the contest, or if the author's true name or educational institution in which he is enrolled is revealed in any way.

Ownership of Manuscripts

8. All manuscripts submitted in either group for this competition shall become the property of the National Association of Purchasing Agents, for such use as the Association may decide to make without compensation to the author.

The contest committee, the Development Committee on Schools and Colleges, a subcommittee of the National Committee on Education, is composed of: Stanley L. Mayo, Freeport Sulphur Company, New Orleans 5, La.; Samuel T. Dickey, Castle & Cooke, Ltd., San Francisco 5, Calif.; and Henry R. Michel, Westinghouse Electric Corporation, East Pittsburgh, Pa.

POTENTIALITY OF PHANTOM ORDERS, N. W. PENNA.

S. J. Irvine, president of the Aero Supply & Manufacturing Co., Corry, Pa., gave a talk on the Present Aircraft Program, New Ships, and the Placing of Phantom Orders in Event of War, at the October 14 meeting of the Purchasing Agents Association of Northwestern Pennsylvania, held in the Corry Hotel, Corry, Pa. His talk was followed by a report on the N.A.P.A. Sixth District Conference meeting which was held in Cincinnati September 27th and 28th, by Tom Servatius and others who attended it. Association Committee ap-

pointments for the current association year are as follows:: Membership: Ray Henry, Oil City; Orin E. Crandall, Olean; W. R. Loveland, Corry; Milford Adams, Jamestown; H. G. Hester, Warren; and E. C. Walker, Bradford; Program and Publicity: C. A. Carlson, Warren; and L. M. Danner, Corry; Education: C. H. Holden, Corry; and P. L. Gedeon, Titusville.

MISSISSIPPI ASSOCIATION HEARS COLLEGE PROFESSOR

The regular meeting of the Mississippi Association of Purchasing Agents was held on October 12, at the Heidelberg Hotel, Jackson, Miss. The featured speaker was Dr. Ross Moore of Millsaps College. Dr. Moore's subject was "Communism and Capitalism in Europe."

"INVENTORY CONTROL" TOPIC AT M.P.A.C. MEETING

A regular meeting of the Metropolitan Purchasers Assistants Club was held at the Midston House, New York, N. Y., on Wednesday evening, October 13. Principal speaker was A. M. Kennedy, Purchasing Agent, Meter Division, Westinghouse Electric Corp., Newark, N. J. Mr. Kennedy is also responsible for storage and handling of the purchases made by his department.

The regular forum was conducted under the direction of E. S. Worden of Container Laboratories, and was on "Corrugated Cartons."

CLEVELAND ASSOCIATION ANNOUNCES YEAR'S PROGRAM

Programs of the Purchasing Agents Association of Cleveland for the balance of the association year have been announced as follows:

November—Educational Night. Victor Lottmann, Director of Purchasing Research, Ford Motor Company, will be the principal speaker.

December—Regular adults' and children's Christmas parties. Margaret McBride will be in charge of the children's affair.

January—Past Presidents' Night. Ralph O. Keefer, president of N.A.P.A. will be guest of honor.

February—Executives' Night. Edward P. Morgan, former special agent of the F.B.I., and administrative assistant to J. Edgar Hoover, will speak on "Communism In Industry".

March—Ladies' Night. Margaret McBride will be in charge.

April—Annual Business Meeting and Election Night.

May (tentative)—Joint meeting with the Sales Executives Club.

Dr. William McGovern, noted lecturer and author, was the guest speaker at the September meeting, held in the Hotel Cleveland. His subject was "So You Think You Are Slipping?". The annual Fathers and Sons Sports Night meeting was held on October 21, and featured a host of celebrities from the sports world.

(Please turn to page 258)

If you are interested in saving money and increasing employee efficiency it will pay to get acquainted with Darnell casters & wheels



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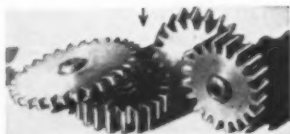
In the past, this practice has greatly benefited our customers. Time and again we have been able to give them prompt service or better—often when the metal market was hard to crack, because we would have the stock on hand.

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THE PECK SPRING CO., 40 Well St., Plainville, Conn.

PACIFIC INTERMOUNTAIN CONFERENCE

(Continued from page 252)

George M. Richardson, manager of purchases and stores, new frequency department, Southern California Edison Co. and former president of the National Association of Purchasing Agents, non-ferrous metals.

Hon. Raymond V. Darby, chairman of the Board of Supervisors, Los Angeles County, was the guest speaker at the Friday evening banquet.

The Saturday session featured forum discussions as follows: "Iron and Steel" under the co-chairmanship of Al B. Tietjen, Southwest Welding & Manufacturing Co., and Farrell Smith, Marchant Calculating Machine Co., Berkeley; "Oil" by E. H. Weaver, Union Oil Co., and Cy T. Hofmeister, Standard Oil Co.; "Government Buyers" by Fred J. Misphey, State of California, Sacramento, and J. W. Hughes, County of Los Angeles; "Packaging and Paper Products", by John A. Tongue, Arden Farms, Inc., and George W. Aljian, California & Hawaiian Sugar Refining Corp., a past president of the National Association of Purchasing Agents.

Reports on district council meetings were given by Harold H. Cake, purchasing agent, Haseltine & Co., Portland, Ore., and vice-president, District One, N.A.P.A. E. G. Bergren, Taylor & Spotswood Co., Inc., San Francisco, and K. H. Searle, Utah Oil Refining Co., Salt Lake City, vice-chairmen of the conference committee, also spoke briefly.

Guests at the conference included Edwin W. Pauley, president, Petrol Corp., and former chairman, U. S. Reparations Commission, and George A. Renard, executive secretary, N.A.P.A. Mr. Renard spoke on "From One P.A. to Another" during the Saturday program.

Among the special events held in conjunction with the conference were a trip through a Hollywood motion picture studio, a tour of the \$100,000,000 Union Oil Co. Refinery at Wilmington, and a tour of the Long Beach-Los Angeles Harbor. Lady registrants attended a fashion show on Saturday noon.

W. E. CUMMIN GUEST SPEAKER AT TORONTO ASSN. MEETING

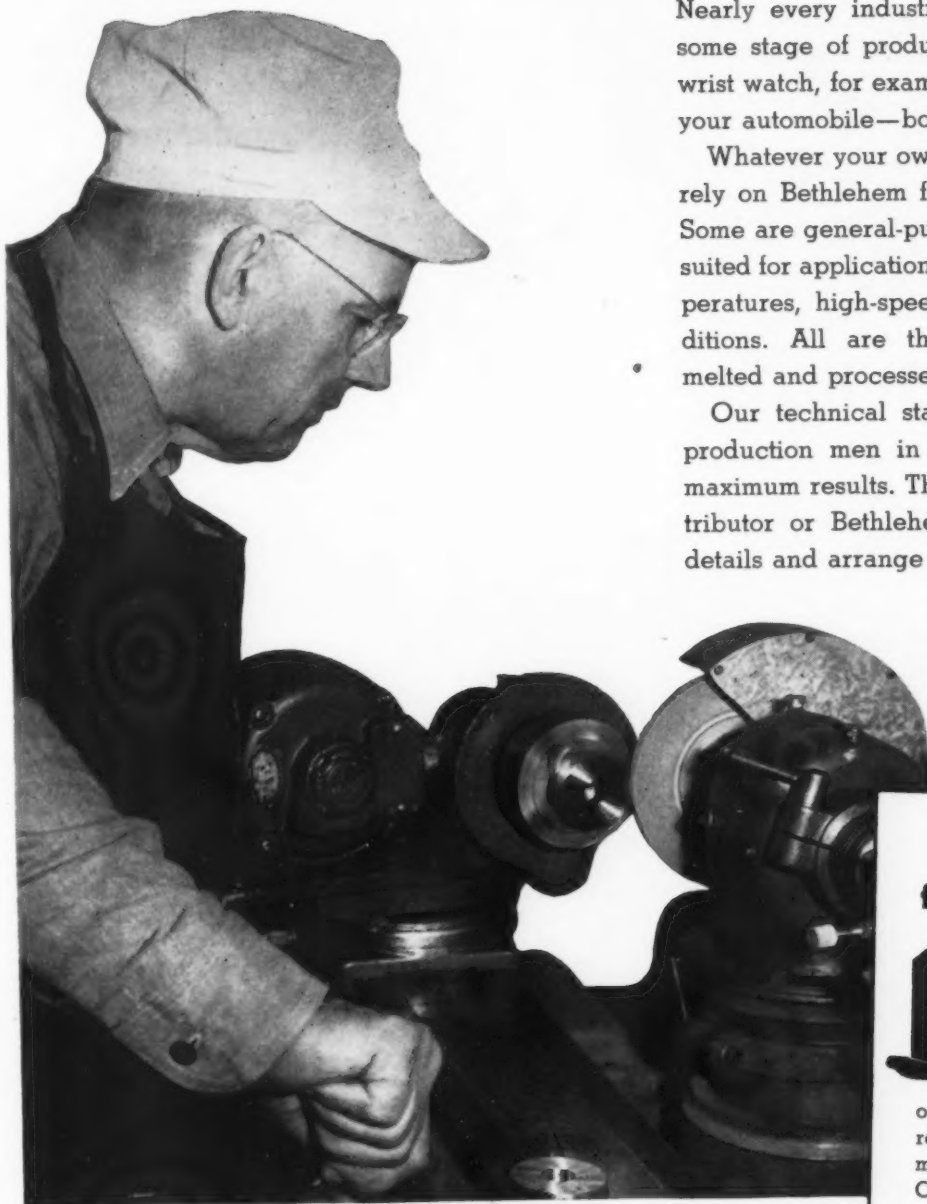
A regular monthly meeting of the Purchasing Agents Association of Toronto was held in the Royal York Hotel on Wednesday, October 13. Guest speaker was W. E. "Chic" Cummin, purchasing agent for White Laboratories Inc., Newark, N. J. and well-known writer, teacher and speaker on purchasing matters.

Mr. Cummin, a former president of the New York association, entitled his talk, "Low Man on the Totem Pole".

John R. Watson, Fullerton Publishing Company, 124 Christie Street, has been named secretary-treasurer of the association to succeed J. H. Pepper, who resigned. Sixteen new members of the association were introduced at the September meeting.

(Please turn to page 260)

A FULL RANGE OF FINE TOOL STEELS



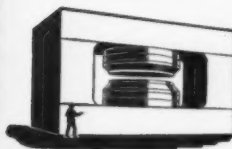
Nearly every industry depends on tools and dies at some stage of production. The delicate parts of your wrist watch, for example, and the massive steel body of your automobile—both are shaped by steel dies.

Whatever your own tool or die jobs may be, you can rely on Bethlehem for a full range of fine tool steels. Some are general-purpose grades; others are specially suited for applications involving heavy shock, high temperatures, high-speed cutting, and other service conditions. All are thoroughly-proved steels, carefully melted and processed in our modern tool steel mill.

Our technical staff is always ready to assist your production men in selecting the best tool steels for maximum results. The nearest Bethlehem tool steel distributor or Bethlehem sales office will give you full details and arrange for prompt delivery.

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The task of finding out what makes tiny atoms tick calls for massive apparatus — most

of it made from steel. Bethlehem has recently built two 2000-ton cyclotron magnets for nuclear fission research at Columbia University and The University of Chicago. These magnets make possible the generation of 400,000,000 electron volts, energy that hurls neutron bullets with phenomenal speed against targets to split atoms and thus throw new light on atomic behavior.

Bethlehem Steel serves all industry in producing steel in its many forms and compositions for infinite uses.

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FLA. • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE.
REIDSVILLE, N.C. • ST. LOUIS • SALT LAKE CITY • TOLEDO

PROGRESSIVE PROGRAM ADOPTED BY CENTRAL N. Y. ASSN.

The Program Committee and the Educational Committee of the Purchasing Agents Association of Syracuse and Central New York, have jointly developed a comprehensive, and progressive program for the monthly meetings of the association during the current association year. The program, which will prove of interest to the officers and directors and also the program and educational committees of other local associations is as follows:

September—Development Engineering
October—Planning and Methods
November—Tool Engineering
December—Production Management
January—Finance and Accounting
March—Traffic
April—Labor Relations
May—Sales and Advertising
June—Top Management (coordinating foregoing activities, policies, etc.)

A. Kemp Stevens is chairman of the program committee, and M. E. Jennings is chairman of the educational committee. G. L. McGaffrey, Auto-Lite Battery Corp., Owen-Dyneto Divn., Syracuse 8, N. Y., is secretary of the association.

It is the plan to take up one phase of business each meeting, with some outstanding speaker from one of the member companies.

ECONOMIC OUTLOOK OF STEEL TOPIC AT LOUISVILLE ASSN.

The Purchasing Agents Association of Louisville held its first fall meeting on September 21 at the Seelbach Hotel.

Neele E. Stearns, assistant to the president of the Inland Steel Corporation was the featured speaker. He discussed "The Economic Outlook of the Steel Industry and the Effect of the Change in Basing Point Prices". Dr. C. Williams, of the University of Louisville, gave his usual monthly analysis of the economic situation.

Henry L. Moran, chairman of the educational committee, gave a brief outline of his program for the balance of the year. Applications for membership by the following were approved: Walter F. Pflumm, Girdler Corporation, and Leve C. Moore, Reynolds Metals Company.

WASHINGTON ASSOCIATION STARTS EDUCATION PROGRAM

The first meeting of a special course instituted under the education committee of the Purchasing Agents Association of Washington was held in the Colman Room of the Seattle Y. M. C. A. on September 23. The topic for discussion was "The New Pricing Methods as a Result of the Supreme Court's Decision in the Cement Case."

Dates scheduled for subsequent meetings were announced as October 28, and November 18, of this year, and January 27, February 24, and March 24 of next year. The sessions will all point up to the final meeting in March on "Purchasing in Relation to Top Management. All classes will be coordinated under the leadership of Professor A. M. Cannon.

(Please turn to page 262)

MATERIALS HANDLING (STANDARDIZED)



LOAD-LIFTS

Efficient easily operated lift truck.
Cannot be cornered.
Will not block aisles.
Easy pulling.
Non-flying handle.
Full cargo deck.
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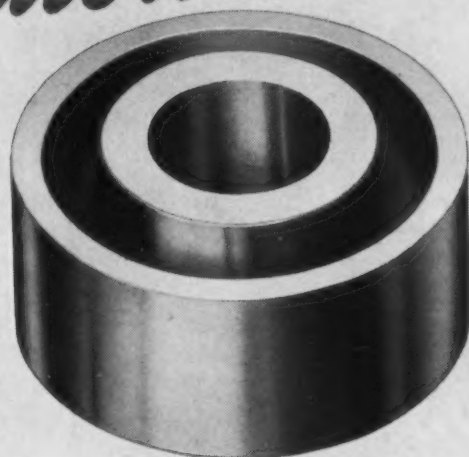


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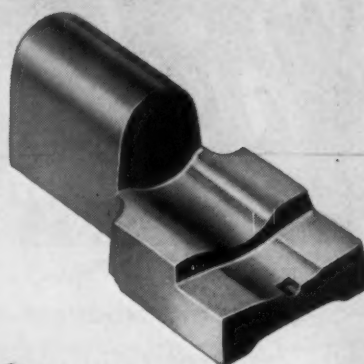
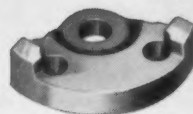
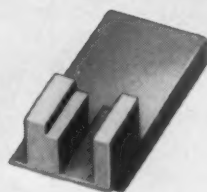
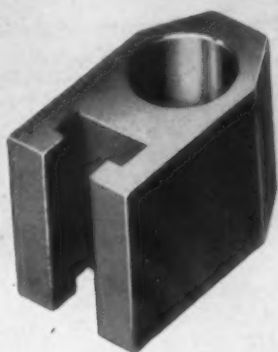
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With the shortage of castings, stampings and forgings, manufacturers look to Amplex for OILITE finished machine parts, from metal powder, replacing those materials. Very frequently Amplex furnishes OILITE finished machine parts, through

powder metallurgy, at a saving. Other advantages of OILITE parts are short tool up time, quick delivery, improved appearance, and the incorporation of details of design not machinable by production machine tools.

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AMPLEX MANUFACTURING CO. DETROIT 31,
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FIELD ENGINEERS AND OILITE BEARING DEPOTS IN PRINCIPAL CITIES

NOVEMBER, 1948

261

An overlay of Ampco-Trode 10 reconditions steel heat-exchanger heads for corrosion-resistant service in the oil industry.

Head off high costs — with Ampco-Trode 10



—avoid frequent replacements by using durable corrosion-and erosion-resistant overlays

Ampco-Trode 10 aluminum bronze arc welding electrodes save money for users every day—making parts last longer, increasing productive time, cutting maintenance costs.

Reconditioning steel heat-exchanger heads in the oil industry is a typical case. Subject to erosion and corrosion, these heads are quickly impaired in service. To avoid expensive replacement, they are reconditioned with Ampco-Trode 10, an aluminum bronze welding electrode. $\frac{1}{4}$ " electrodes are used, deposited with a fast wide-weave

bead to minimize base-metal pick-up. No finish grinding is required. The superior corrosion-resistant qualities of this aluminum-bronze overlay actually make the head "better than new."

You, too, can save time and money with Ampco-Trode 10! Use it to weld dissimilar metals—for bearing surfaces where hardness and friction resistance are important—for process equipment where corrosion-resistance is essential. See your nearest Ampco distributor today for a supply of these money-saving electrodes. Write for bulletins giving complete information.

Ampco Metal, Inc.

Department P-11, Milwaukee 4, Wisconsin
Field Offices in Principal Cities



Non-sparking safety tools



Fabricated assemblies



Corrosion-resistant pumps



Castings



Welding electrodes

Specialists in engineering, production, finishing of copper-base alloy parts and products.



Sheet, cast-extruded-rod

POLICE OFFICIAL GUEST AT ROCHESTER BUYERS MEETING

The first regular meeting of the new business year of the Rochester Association of Industrial Buyers was held at the Normandie Hotel on Wednesday, October 13. The program featured Captain William Winfield, Chief of the Bureau of Identification, Rochester Police Department.

Captain Winfield dramatized his talk on "Problems In Police Work," with official slide photographs from the files of the bureau. He described an illustrated interesting aspect of many of the city's most baffling and gruesome crimes.

The program for the balance of the year has been announced as follows:

November 10—Movie on packaging presented by Hubbs & Hastings.

December 8—Christmas party (place to be designated later).

January 12—Talk on plastics by Garson Meyer, Eastman Kodak Company.

February 9—Talk by chief of the research department of the Indiana Steel Products Company.

March 9—Moving picture on aluminum, presented by the Aluminum Company of America.

April 13—Annual election of officers and football movies.

May 11—Mixed party (place to be designated later).

ELECTRICAL SUPPLY OUTLOOK TOPIC AT KALAMAZOO ASSN.

A regular meeting of the Kalamazoo Purchasing Agents was held at the Columbia Hotel on Thursday noon, October 7th. Guest speaker was Bernard W. Wilder, Klose Electric Company, whose subject was "The Outlook on Electrical Supplies."

A special meeting of the association was held on September 30 at the Columbia Hotel to honor special guests Ralph O. Keefer, president of N. A. P. A., and N. J. Gibbins, Director of Purchases at Motor Wheel Corp., and vice-president for District Four.

BUFFALO ASSOCIATION HOST TO DISTRICT 8 MEETING

Officers and members of the Purchasing Agents Association of Buffalo played host to the delegates attending the Eighth District Council meeting in that city on October 8 and 9. The national directors and their alternates from member associations were guests at the Buffalo meeting held in the Hotel Statler on Friday evening, October 8.

Guest speaker at the meeting was Charles C. Fichtner, executive vice-president of the Buffalo Chamber of Commerce.

Program meetings for the balance of the business year have been announced as follows:

November 10—Educational Night.

December 8—Christmas Party.

January 12—Executive Night.

February 9—Commodities.

March 9—Educational Night.

April 13—Salesmen's Night.

May 11—Niagara Falls Night.

June 9—Annual election of officers.

(Please turn to page 264)

Choosing the Right Stock Drill



- Cuts Your Cost Per Hole
- Eliminates Breakage
- Speeds Production

Yes, there are many advantages in selecting the right drill for each job. ♦ For instance, one of our customers was getting excessive breakage with regular jobbers' length drills on the set-up pictured here—drilling holes $\frac{7}{16}$ inch deep in stainless steel. A *Cleveland* Service Representative was able to correct this situation by recommending a stub screw machine drill which, because of its heavier construction and shorter length, is giving complete satisfaction. ♦ Your drilling problems, too, perhaps can be solved by a *Cleveland* Service Representative—without cost or obligation. Contact our nearest Stockroom, or . . .

Telephone Your Industrial Supply Distributor



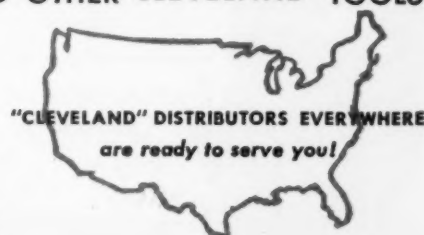
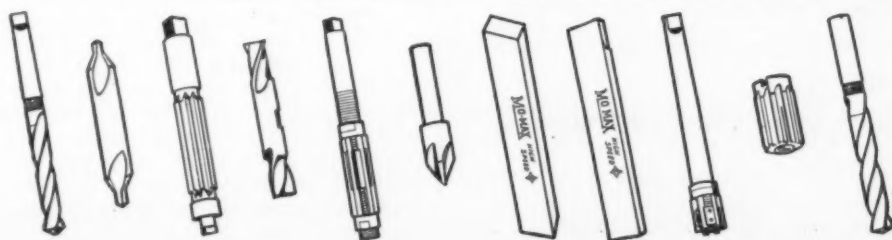
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laughs
at heat!**



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IN HOGGING OFF BIG CHIPS with a dry grinding backstand belt — or anything else — the tough factor is *heat*. Here's the belt to beat it — the new RESINALL METALITE belt, with its heat-defying thermosetting resin bond, plus Behr-Manning Durabonding. This combination double-locks every chip-gouging grain rigidly in place with its enduring cutting edge at the true cutting angle, and holds it there in spite of the incandescent heat of heavy stock removal.

You get higher production three ways — sustained sharp cutting because the grains stand up to their work . . . freedom from undue loading because the non-softening bond will not get stuck with the chips . . . and far less downtime for belt changes, because this new belt gives you 2 to 4 times greater belt mileage. Check on all this in your own shop — mail the coupon.

GET A FREE TEST

See the new Resinall Metalite belt do its stuff in your own shop on your own work. Just mail the coupon.

BEHR-MANNING • TROY, N. Y.

(DIVISION OF NORTON COMPANY)



BEHR-MANNING, TROY, N. Y.

We'd like to see what your new RESINALL METALITE belt can do on our work.

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COMPANY STATE
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GEORGIA ASSOCIATION VISITS ATLANTA PAPER COMPANY

The Purchasing Agents Association of Georgia had a plant visitation meeting on October 8, as guests of the Atlanta Paper Company. The tour of the plant was held in the late afternoon, with the visitors being taken on a complete inspection trip in groups of 8 and 10. The groups saw details of the manufacture of folding boxes, corrugated boxes and folding bags.

Members of the association were guests of the company for dinner in the evening in the plant cafeteria. Arthur L. Harris, president of the firm, spoke on "Purchasing and Stock Control," giving the relation of purchasing to scheduling, production, and plant coordination.

LABOR CONTRACTS TOPIC AT NEW ORLEANS ASSOCIATION

The regular monthly dinner meeting of the Purchasing Agents Association of New Orleans was held at the Jung Hotel on Monday, October 11. Gibbons Burke, local counsel, was the principal speaker, on the subject, "Present Day Legal Aspects of Labor Contracts in the State of Louisiana."

The following have been elected to active membership in the association: J. J. White, assistant purchasing agent, Gaylord Container Corporation; E. J. Kinabrew, Purchasing Agent, Rheem Manufacturing Company; W. E. Hinshaw, District Purchasing Agent, Alcoa Steamship Company.

TULSA ASSOCIATION ACTIVE IN OCTOBER

October activities of the Purchasing Agents Association of Tulsa included a golf tournament on the 9th, at Indian Hills Country Club, with salesmen as guests, and a business meeting on the 13th, at which was shown a motion picture film, "Must It Rust," sponsored by American Hot Dipped Galvanizing Association. On October 13, members of the association visited the plant of Hinderliter Tool Division, H. K. Porter Company, in Tulsa.

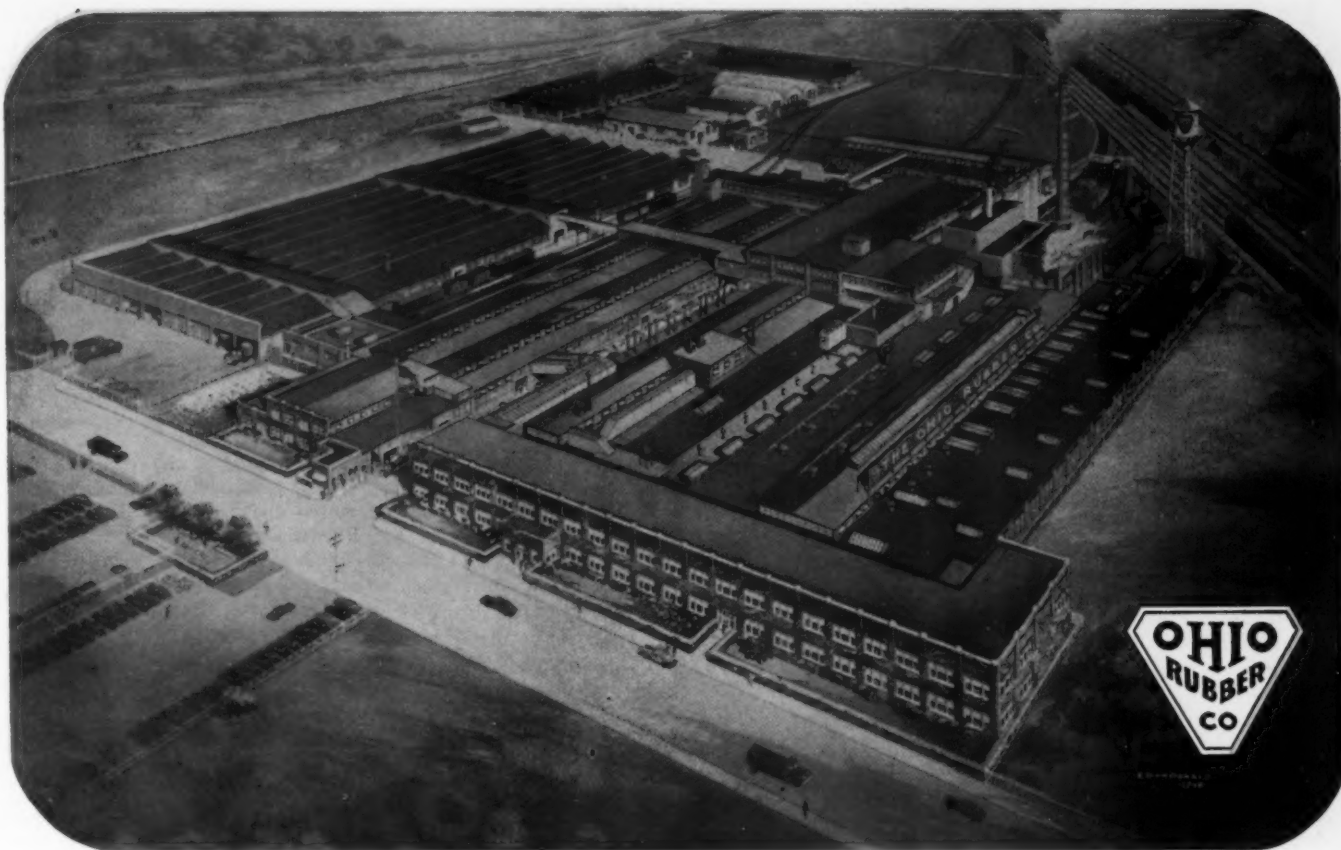
It has been announced that the annual Presidents'-Ladies Night dinner dance will be held on December 17 at the Tulsa Club.

TEXAS PANHANDLE ASSOCIATION STARTS ACTIVE NEW SEASON

The Purchasing Agents Association of the Texas Panhandle opened what promises to be a very active year with an interesting meeting in Amarillo on September 8. Guest speaker was Ted Reno, area purchasing agent for Phillips Petroleum Company who spoke on "Steel", with emphasis on the oil field tubular goods. A Ladies Night meeting was held on October 13.

A plant visit, dinner and film will feature the November 10 meeting of the group. The plant to be visited is that of the U.S. Rubber Co. at Borger, Tex. Following the afternoon visit, dinner will be held at the Huber Golf Club. The film to be shown at the meeting is "It's Good Business", issued by the Bates Manufacturing Company.

(Please turn to page 266)



Main Offices and Factory of The Ohio Rubber Company at Willoughby, Ohio

14 ACRES OF "RUBBER KNOW-HOW"

(Specialists in Manufacturing to Customers Specifications)

"KNOW-HOW" is what makes the U. S. A. the greatest industrial nation in the world. Industrial "KNOW-HOW" is a combination

of sound business management, practical research, advanced engineering practice, modern manufacturing techniques and, what

is most important, the SPIRIT OF SERVICE as fostered under the American system of free enterprise. Those are the factors that devel-

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Where electrical contact is required to a moving part, laminated precious metal rings offer unusual operating characteristics at a real saving in cost over solid precious metal rings.

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These rings are now being used in special electric motors, calculators, and computators, Radar, and fire control instruments, potentiometers, and other electro mechanical devices.

Our engineers will be pleased to make recommendations to meet your requirements. We would also be pleased to submit quotations to cover your specifications.



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ALABAMA ASSOCIATION HEARS TALK ON ATOMIC ENERGY

The first regular meeting of the new season was held by the Purchasing Agents Association of Alabama at the Thomas Jefferson Hotel, Birmingham, Ala. on September 23. Principal speaker at the meeting was T. L. Bissell, manager of the industrial power division, sales department, Alabama Power Company. Mr. Bissell's subject was "Electricity and Atomic Energy—Their Relation to Each Other".

1 1 1

CENTRAL ONTARIO GROUP VISITS STEEL COMPANY

A plant visitation to the plant of the Steel Company of Canada, Hamilton, Ont., Can., featured the September 28 meeting of the Purchasing Agents Association of Central Ontario. Following the tour, the company played host to association members at an informal reception in the 10 O'Clock Club of the Royal Connaught Hotel. The regular association meeting was held in the same room that evening.

1 1 1

HOCKEY OFFICIAL TALKS AT MONTREAL ASSN. MEETING

The first dinner meeting of the season was held by the Purchasing Agents Association of Montreal on Tuesday, September 21 in the ballroom of the Mount Royal Hotel. Lieut. Col. Clarence S. Campbell, M.B.E., K.C., president of the National Hockey League was guest speaker. Colonel Campbell's subject was "The Place of Sport in the Community". Entertainment was provided under the direction of Lorne Fellows.

1 1 1

"A LOOK INSIDE BEHAVIOUR" RHODE ISLAND ASSOCIATION

The opening meeting of the new year was held by the Rhode Island Purchasing Agents Association at the Narragansett Hotel, Providence, R. I., on Monday, September 27. Speaker of the evening was F. Alexander Magoun, president of Human Relations, Inc., and associate professor at Massachusetts Institute of Technology. He is a consultant in human relations for several business and industrial corporations, and is the author of a number of articles and books on the subject. His talk was entitled, "A Look Inside Behavior".

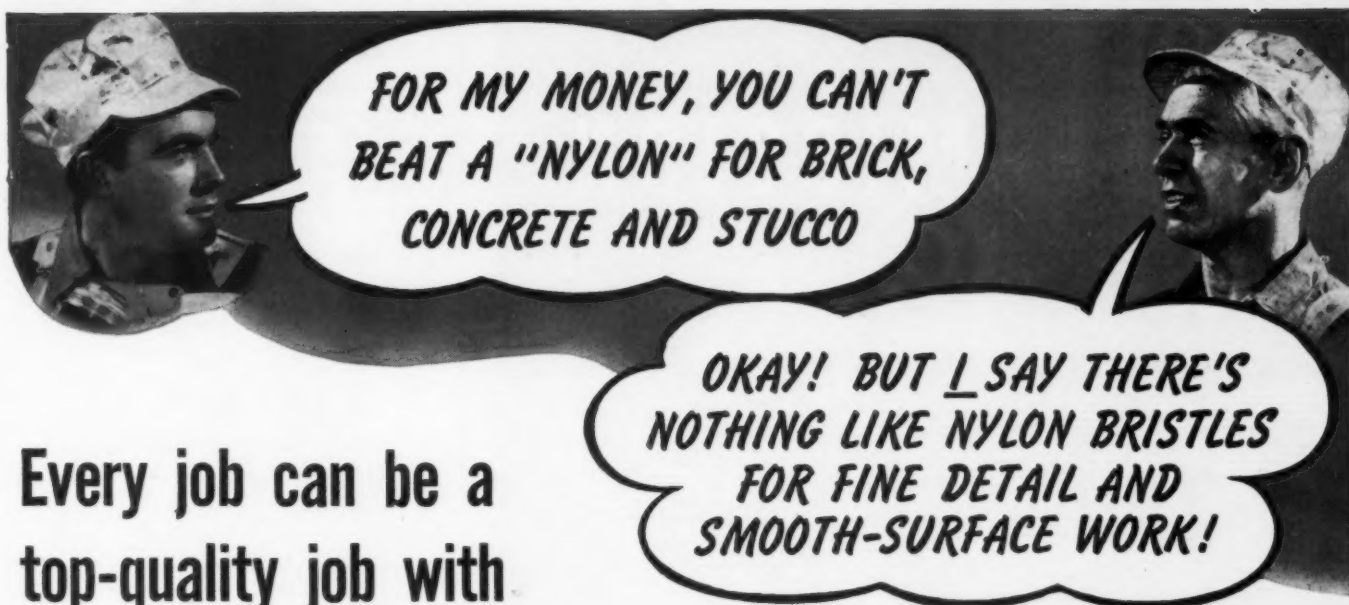
A commodity forum under the direction of Ralph Berry, with Herbert N. McGill as guest consultant, was held prior to the dinner meeting.

1 1 1

PITTSBURGH ASSOCIATION HEARS TALK ON LABOR

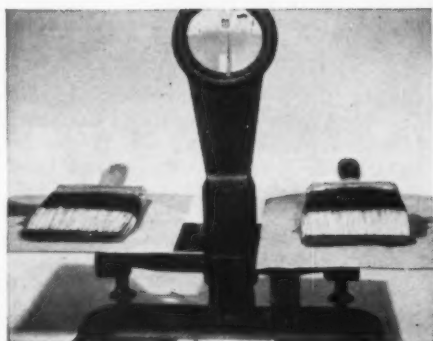
A closed meeting at the Hotel William Penn on September 21 opened the fall season for the Purchasing Agents Association of Pittsburgh. H. O. Eby, of the industrial relations staff of Pittsburgh Plate Glass Company, was the principal speaker, on the topic "Labor and the Purchasing Agent".

(Please turn to page 268)



Every job can be a
top-quality job with

NYLON-BRISTLED PAINTBRUSHES



NYLON REALLY HOLDS PAINT

Nylon bristles of various lengths can be blended and sanded to hold paint as well as or better than any others. Above, brushes with nylon bristles and pure animal bristles of equal dry weight were dipped to same depth in paint. Weighing after simultaneous removal showed nylon holds more paint!



NYLON LAYS IT ON S-M-O-O-T-H

Each nylon bristle is tapered and sanded to a fine tip, to control the smoothness of the painted surface. In this test above, identical surfaces were painted with a nylon-bristled brush and an animal-bristled brush. The magnified view shows that nylon bristles lay down a smoother, finer coat!



NYLON BRISTLES LAST FAR LONGER

Nylon-bristled brushes continue on the job long after others have failed. Wear-test machine above imitates painter's stroke. At the start, both nylon bristles and natural bristles were of equal length. But after one million strokes, the nylon bristles showed less than one-fifth the wear!

More and more painters are buying nylon-bristled brushes

Whether it's rough exterior work or fine interior trim—painters get a *top-quality* paint job with nylon-bristled brushes. For properly made

nylon brushes *really* hold paint . . . turn out as smooth a job as you ever saw. And they not only paint better—they'll save you money, too! Nylon bristles outwear others 3 to 5 times—save 40 to 80% of brush costs. That's been proved over and over again, in laboratory tests and on the job.

But . . . be sure to look for the

words **NYLON BRISTLES** stamped clearly on the brush handle. Because *there's no substitute for nylon!* Clip coupon below for free copies of our helpful new booklet, "How you can save money on the job with paintbrushes bristled with **DU PONT NYLON.**" E. I. du Pont de Nemours & Co. (Inc.), Plastics Dept., Room 8411, Arlington, N. J.

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... THROUGH CHEMISTRY

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Please send me () copies of "How you can save money on the job with paintbrushes bristled with Du Pont Nylon."

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and the costs come **TUMBLING DOWN!**
WHEN YOU PUT
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GO-GETTER POWER LIFTRUCKS



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Single, Two Stroke and Multiple Stroke Hydraulic. Used daily in thousands of shops, factories and warehouses. Inexpensive, simple, long lasting.

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ALUMINUM OFFICIAL GUEST AT CHATTANOOGA MEETING

The regular monthly meeting of the Purchasing Agents Association of Chattanooga was held on Tuesday evening, September 13 in the Hotel Patten.

Guest speaker was A. D. Huddleston, regional manager, Aluminum Company of America, Alcoa, Tenn., who spoke on "Aluminum in the Southeast." Mr. Huddleston also showed a film entitled "Curiosity Shop," which showed research, development, and engineering problems pertaining to aluminum.

1 1 1

HOUSTON ASSOCIATION HAS ANNUAL GOLF TOURNAMENT

The annual fall golf tournament and barbecue of the Purchasing Agents Association of Houston was held at the Texaco Country Club on October 7. The tournament was an all-day affair with the barbecue being held in the evening. General chairman of the affair was R. T. Eaton, purchasing agent of J. S. Abercrombie Company.

1 1 1

ECONOMIC ADVISER SPEAKS AT HAMILTON DISTRICT MEETING

A regular dinner meeting of the Purchasing Agents Association of Hamilton District was held at the Royal Connaught Hotel, Hamilton, Can., on Wednesday, October 20. The guest speaker was Stuart Armour, economic adviser to the Steel Company of Canada. Mr. Armour conducted a question and answer period following his talk.

The November meeting will take the form of a visit to Branford, which will be the second annual visit of the association.

1 1 1

BALTIMORE ASSOCIATION HAS PAST PRESIDENTS' NIGHT

Past presidents of the Purchasing Agents Association of Baltimore were honored at the regular monthly meeting of the group held on September 15. As a token of appreciation for their services, each past president received a gavel, with the presentation presided over by J. H. Gaston, City Purchasing Agent.

1 1 1

SOUTHWESTERN HUMORIST TALKS TO CHICAGO ASSN.

Frank Streetman, Oklahoma humorist known as the "Mayor of Sasakwa" was guest speaker at the October 14 meeting of the Purchasing Agents Association of Chicago, held in the Hotel Sherman. His topic was "Affairs of State".

Mr. Streetman, who is purchasing agent for the State Highway Commission of Oklahoma, had an ample fund of witty and entertaining stories, which bore out his reputation as "the best humorist in the Southwest".

(Please turn to page 270)

Carriage Bolt

Big Item in the Horse & Buggy Era

...AND STILL IMPORTANT
IN MODERN INDUSTRY!



But carriage bolts are only one of hundreds of kinds of metal fasteners supplied by Sterling Bolt to industry today.

In steel or brass—cut thread or rolled thread—stock or special order—the name **STERLING BOLT** is your assurance of quality bolts, screws, washers and metal fasteners of all types. Whatever your fastening need, for prompt dependable service and delivery of the right fastener at the *right* time, **CALL THE STERLING BOLT CO.** Phone, write or wire today.



Sterling Bolt's big catalog is a life-saver to the busy executive. All your metal fastening requirements can be filled from its pages, and in addition to convenience, single-source buying saves time and money.



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FOUNDER OF PURCHASING SERVICE ADDRESSES OREGON MEETING

Ivan Horne, member of the education committee of the Purchasing Agents Association of Oregon, Portland, Ore., and founder and operator of the General Purchasing Agency, Portland, gave the members an interesting talk about his experiences, at the first fall meeting of the Association which was held September 20.

His service has been quite diversified, ranging from the buying of a particular type of yacht, to 100,000 used comic books, and a hurry-up order for 100 tons of anti-mony. Mr. Horne cited the following as being some of the seldom thought of rules for good purchasing:

Persistence; Try near home; Don't believe all you hear; Spend the extra nickel; The tilting chair—give yourself time enough to think out problems; Catalogs as invaluable source data.

Other speakers on specialized lines of purchasing were Lloyd Childers of Good-year Rubber & Asbestos, who stressed that purchasing agents must keep abreast of price trends, competitive lines, range of items in stock, and the possibility of new uses and adaptations of materials; George Williams of the Wiggins Company, who declared that experience has shown that any by-passing of the purchasing department can be particularly costly; and C. L. Bay of the General Electric Co., who described intra-company purchasing from the concerns own 36 plants.

1 1 1

INLAND EMPIRE GROUP HOLDS ANNUAL BANQUET

The Inland Empire branch of the Purchasing Agents Association of Washington held its first annual banquet at the Masonic Temple, Spokane, Wash., on October 15.

Dr. Walter W. Isle, president of Eastern Washington College of Education was the principal speaker. Wallace Campbell of Seattle was the toastmaster.

1 1 1

DANCE OPENS SEASON FOR SOUTH BEND ASSOCIATION

The Purchasing Agents Association of South Bend opened the fall season with a golf-dinner dance party at the Christiana Country Club, Elkhart, Ind., on September 15. The golf tournament started in the morning. Dinner was served in the evening, with dancing until midnight following.

1 1 1

TWIN CITY ASSOCIATION VISITS BOLT COMPANY

Members of the Twin City Association of Purchasing Agents visited the plant of the Lewis Bolt & Nut Company, Minneapolis, Minn., as part of their first fall meeting, on September 8. The meeting was held in the St. Paul Athletic Club, following the visit. Members were guests of W. G. Hartman, president and general manager of the company at a social hour preceding the meeting.

(Please turn to page 272)

Sawyer's
PROTECTIVE WEAR
stays Pliable!



100% waterproof Neoprene* has been added to Sawyer's famous LIGHTHOUSE Brand of protective wear. Roomier and lighterweight, Neoprene garments are soft, pliable . . . and they stay pliable no matter what the weather! Resist most acids. They're built to give comfortable stormy weather protection through many years of hard wear. Complete range of sizes—black or yellow.

*Reg. T. M. of E. I. duPont de Nemours & Co

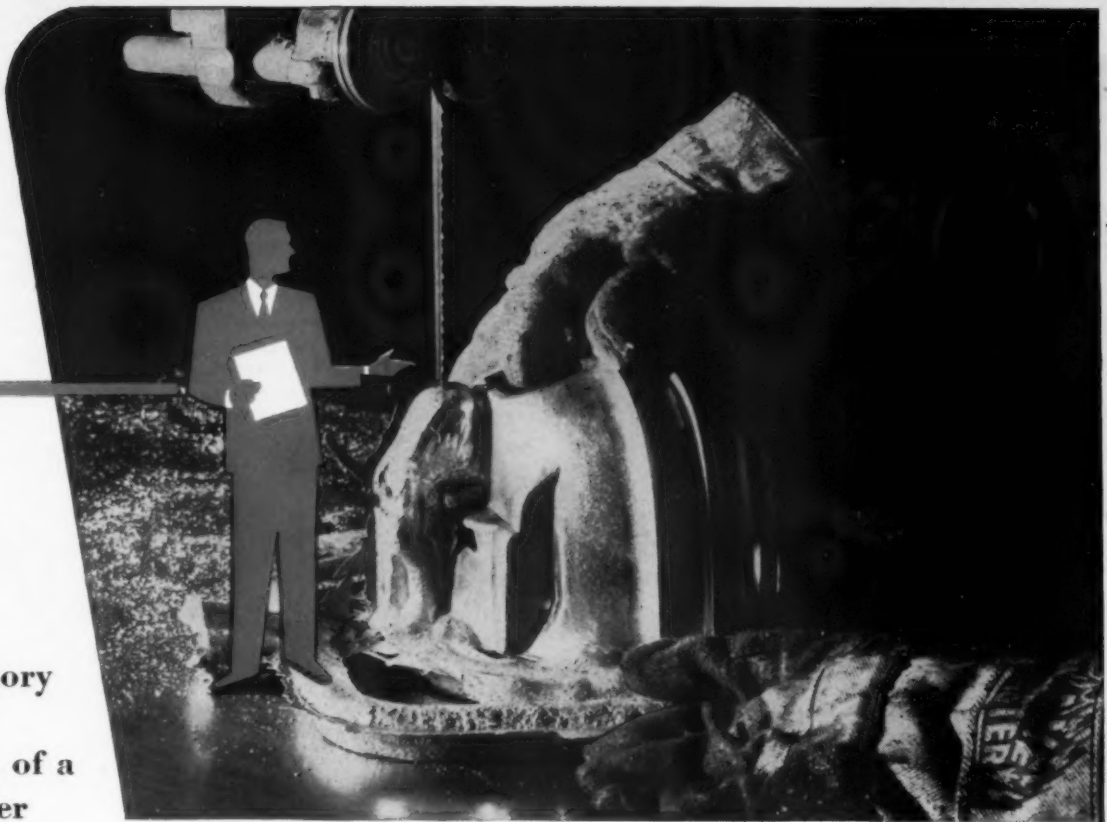
ANOTHER NEW FAVORITE!

Another recent addition is Sawyer's Hycar** Aprons! Already LIGHTHOUSE Brand favorites, these aprons are light and tough—resist most acids, have no cumbersome reinforcement. Two lightweight styles (ideal for women!) have waist tie tapes only; the heavier apron, four grommets. Tapes go under hem to give greater strength.

**American Rubber Hycar is a product of
B. F. Goodrich Chemical Company

The H. M. SAWYER & SON COMPANY
CAMBRIDGE, MASSACHUSETTS

**A case history
from the
notebook of a
Disstoneer**



Disston Hard Edge Flexible Back Band Saw (Buttress Tooth Pattern) cutting aluminum alloy castings in plant of a California foundry.

**How a DISSTONEER helped save 2½ to 3 hours
per day on a metal-cutting band saw job . . .**

He may be able to do as much for you

This foundry was cutting aluminum alloy castings, used for the cap ends of cylinder type vacuum cleaners. The pieces cut are 8" in circumference and ½" thick (one gate runs 4" high and 1" thick).

A buttress tooth band saw blade, 18' x ½" x 4T, was being used. Blades were not clearing on the contour cutting, thus causing them to lead off and spoil castings. Also, blades were wearing out too fast. The company was getting little more than 15 castings per blade.

The Disstoneer recommended a Disston Buttress Tooth Pattern Flexback blade, 18' x ¾" x 4T . . . only a slight change, but what a difference in results! The number of castings per blade was increased to 50. But, of even greater importance than saving blade-costs and reducing down time, production was speeded up to a point where 2½ to 3 hours per day were saved.

After the trouble was eliminated, the Disstoneer was told, "I knew you could help me, that's why I called you. I'm very well pleased with the change, and quite happy."

Like this foundry, and hundreds of other manufacturers who have profited from Disstoneer service, you, too, will be "very well pleased" with the savings he can make for you. He will be glad to call at your convenience and without charge or obligation.

Write for full particulars, or get in touch with your local Disston Distributor

**DISSTON BUTTRESS TOOTH
PATTERN HARD EDGE
FLEXIBLE BACK BAND SAW**

Designed for machines operating at speeds of 3000 fpm or over. Wide tooth spacing allows faster feed as wider gullet provides greater chip clearance. Recommended for magnesium and aluminum alloys.

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Compressor Unit



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TORONTO PURCHASING AGENTS SPONSOR EVENING CLASSES

An educational course for purchasing agents arranged in collaboration with the Purchasing Agents Association of Toronto, is being conducted by the University Extension, University of Toronto. The classes, which commenced Tuesday evening, October 19th are open not only to those now engaged in purchasing, but also to men and women who hope to join the purchasing profession. The fee is \$5.00 for the series of ten evening sessions which are concluded on December 21st with one on Psychology. It is stated that there is a probability that a second class, continuing for another ten weeks, may be arranged to commence late in January.

The program is as follows, a half hour being devoted to discussion and questions at the conclusion of each lecture:

October 19: Tariffs, C. Godfrey Sherwin, the Grinnell Company of Canada, Toronto.

October 26: Tariffs, G. Blake, M.A., Department of Political Economy, University of Toronto.

November 2: Transportation, Fred A. Waghorne, Scythes & Co. Ltd., Toronto.

November 9: Transportation, Prof. A. W. Currie, B.A., D. Com. Sc., Department of Political Economy, University of Toronto.

November 16: Business Law, David Vaneck, B.A., Lecturer, School of Law, University of Toronto.

November 23: Business Law, David Vaneck, B.A.

November 30: Economics, G. Blake, M.A., Department of Political Economy, University of Toronto.

December 7: Economics, G. Blake, M.A.

December 14: Psychology, Prof. K. S. Bernhardt, M.A., Ph.D., Department of Psychology, University of Toronto.

December 21: Psychology, Prof. K. S. Bernhardt, M.A., Ph.D.

WISCONSIN PUBLIC BUYERS MEET AT MILWAUKEE

The quarterly meeting of the Wisconsin Chapter, National Institute of Governmental Purchasing, was held in the Board Room, Milwaukee City Hall, on September 24th. The planned program of discussion subjects was considerably curtailed in view of the fact that several of these topics were scheduled for discussion at the annual convention of the national organization at Philadelphia in October, and a more complete consideration would be possible at the next meeting of the Wisconsin group with the benefit of the additional information to be developed there.

J. W. Nicholson, City Purchasing Agent for Milwaukee, spoke on the problem of getting deliveries of material and equipment to municipalities on contract before the contract is actually signed by the proper officer of the supplier company. This situation sometimes arises due to the fact that usually one of the higher officers of the contracting firm is expected to sign such contracts, and delays may ensue in the event that such officer is

absent at the time a contract comes up for signature. To avoid delays in delivery of needed materials and equipment under these circumstances, the Milwaukee purchasing department has formulated a "Notice of Award and Authorization to Proceed with Contract", which is sent to the supplier and acknowledged by him, putting the contract into effect at once. This Notice is subsequently confirmed by the signing of the actual contract.

Since it is a definite policy of the department to place contracts only with reliable firms, usually after checking their financial and credit rating, there has been no repercussion due to such authorization to deliver before the contract is signed. A careful record is kept of past performance by suppliers. In any questionable cases, advice is sought from the City Attorney's office regarding a supplier's responsibility. Because of these precautions, no difficulty with contractors and suppliers has arisen or is expected due to inability to fulfill contracts.

The next meeting of the Wisconsin Chapter will be held at Madison, on December 1st.

NOTED JUDGE SPEAKER AT TOLEDO ASSN. MEETING

A regular meeting of the Purchasing Agents Association of Toledo was held at the Elks Club on October 5. Guest speaker was Judge Paul W. Alexander, nationally known authority on problems of divorce and juvenile delinquency, who recently attended the National Clinic on Divorce in Seattle, Wash. Judge Alexander's subject was "The New Look In Divorce."

SYRACUSE & CENTRAL N. Y. EDUCATIONAL PROGRAM

The educational program of the Purchasing Agents Association of Syracuse and Central New York, is now in the process of being formulated, with a questionnaire type of letter listing the subjects to be covered in each monthly meeting having been sent out to members. They are being asked to go over the topics suggested and see if some person in their companies would discuss the questions or sit on the panel.

It is felt that in this way all members are helping to formulate the program, and with the assistance of qualified men in their own organizations, are covering the entire scope of business endeavor.

Following is the list of subjects and the proposed monthly meetings that were sent to members:

September—Development Engineering
October—Planning and Methods
November—Tool Engineering
December—Production Management
January—Quality Control
February—Finance and Accounting
March—Traffic
April—Labor Relations
May—Sales and Advertising
June—Top Management (coordinating the above activities, policies, etc.)

(Please turn to page 274)

1,950

Hammer Blows

A MINUTE



Black & Decker No. 36
Portable Electric Hammer

—yet the Red Elastic Collar provides
dependable protection against VIBRATION

Vibration, from 1,950 sturdy hammer blows a minute, developed two problem spots on this Portable Electric Hammer. First, where the nuts had to lock in position on top of the spring-loaded-pins. Second, where prestressed nuts had to hold the vibrating tool-retainer-yoke to the spring-loaded-pins. All types of conventional fasteners failed. ESNA Elastic Stop Nuts held permanently!—just as they have permanently held against vibration on other types of hammers for over fifteen years.

Assured protection has made Elastic Stop Nuts the standard fastener on thousands of machines because it improves their performance and cuts down service problems.

Here's a challenge: Send us complete details of your toughest bolted trouble spot. We'll supply test nuts—FREE, in experimental quantities. Or, if you want further information, write for literature.

Elastic Stop Nut Corporation of America, Union, New Jersey. Representatives and Agents are located in many principal cities.

ESNA
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THE FAMOUS RED ELASTIC COLLAR
IS VISIBLE EVIDENCE OF
LOCKING SECURITY

Threadless and permanently elastic,
it provides these 4 outstanding
features:

1. Protects against nuts loosening due to VIBRATION
2. Keeps locking threads CORROSION FREE
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AND IT IS RE-USABLE

ELASTIC STOP NUTS



INTERNAL
WRENCHING



ANCHOR



INSTRUMENT
MOUNTING



SPLINE



CLINCH



GANG
CHANNEL



CAP

OVER 450 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK

"AGED-IN-THE-OVEN"



...another
PANTHER and DRAGON
TEST
to assure you of
tapes that last

● One of the many tests PANTHER and DRAGON Friction Tapes undergo is "accelerated aging." In the oven illustrated, test samples are baked to give the effect of many months aging under natural conditions.

These "aged" tapes always compare favorably with their original high standards of adhesive qualities. That's why PANTHER and DRAGON Tapes make good splices that last... that's why more and more tape users ask for PANTHER and DRAGON.

Sold only through recognized independent wholesalers. The Okonite Company, Passaic, New Jersey.



CONNECTICUT ASSOCIATION HEARS FAMOUS HUMORIST

The first regular meeting of the new season of the Purchasing Agents Association of Connecticut was held in the Waterbury Country Club, Waterbury, Conn. on Tuesday, September 28. Speaker of the evening was Dr. William Stanley Sims, nationally famous American humorist and commentator. His subject was "For Value Received" a witty and entertaining talk.

1 1 1

DU PONT OFFICIAL SPEAKS AT TRI-STATE MEETING

A meeting of the Tri-State Purchasing Agents Association was held in the Prichard Hotel, Huntington, West Virginia, on Tuesday, September 22. Principal speaker was R. O. Bradley, Cleveland, O., maintenance sales supervisor of the Du Pont Company of Cleveland. Mr. Bradley also showed a technicolor sound film on Du Pont "color conditioning" for industry. V. H. Moore was program chairman.

1 1 1

ERIE ASSOCIATION SEES TWO INDUSTRIAL FILMS

The Purchasing Agents Association of Erie held its opening meeting of the new season at the Elks Club on September 15. Two films were shown to the group: "Die Casting," through the courtesy of the New Jersey Zinc Co., and "The Paint Film," by the same company.

1 1 1

KEEFER GUEST OF EASTERN INDIANA ASSOCIATION

An address by Ralph O. Keefer, president of the National Association of Purchasing Agents, featured the first meeting of the new business year, held by the Purchasing Agents Association of Eastern Indiana at the Forest Hills Country Club, Richmond, Ind., on September 28.

Nelson Gibbins, N. A. P. A. vice-president for District Four also spoke at the meeting.

1 1 1

CANTON ASSOCIATION VISITS TIMKEN COMPANY PLANT

Fifty members and guests of the Canton Association of Purchasing Agents recently visited the main plant of the Timken Roller Bearing Company, Canton, O. Following dinner, at which they were guests of the company, they were conducted through portions of the steel mill and bearing factory. Preceding the tour, Blair Glenn, assistant works manager, gave a short talk, describing the beginnings of the company, its progress, products and policy. The visit was arranged through association president H. A. Grauman, purchasing agent for Timken, who also conducted the meeting.

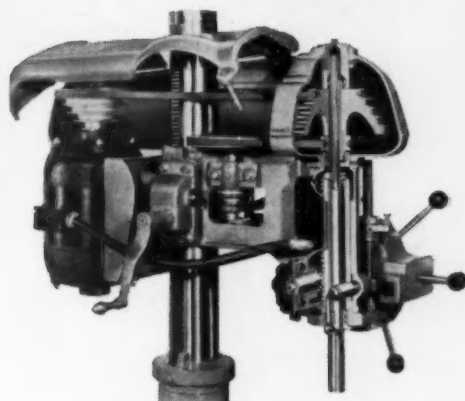
The following new members have been admitted to the association: Joseph J. Babbo, Babcock Printing Press Corp.; Geo. E. Gussett, Gussett Boiler & Welding, Inc.; Homer D. Sommer, Sommer Electric Co.

(Please turn to page 276)

FOR EXAMPLE



Model D-1101X Power Feed. Price:
less motor and column \$216.00
D-1100X Hand Feed. \$135.00*



HARLEY-DAVIDSON PERFORMS

110 SEPARATE OPERATIONS

WITH WALKER-TURNER 20" DRILL HEADS

Walker-Turner Light Machine Tools solve a dual problem for the Harley-Davidson Motor Co., Milwaukee, Wisconsin, in the production of their new lightweight model motorcycle. They fill the need for *standard* machine tools capable of handling approximately 110 *separate* drilling, tapping and spot-facing operations, and eliminate the necessity for replacing expensive, special machines when models change.

In set-ups devised by Harley-Davidson engineers, over 100 Walker-Turner Drill Heads machine motor, brake plate and crank-case assemblies. The equipment drills holes ranging from $\frac{1}{8}$ " to 1" in diameter at spindle speeds from 260 to 2600

r.p.m. When necessary, accuracy to .001" is attained. Both high-speed steel and carbide tools are employed.

Here again, Walker-Turner Light Machine Tools demonstrate their flexibility. Compact and rugged, Walker-Turner Light Machine Tools work *all* materials from wood and plastics through tool steel . . . set new high production records . . . give long, trouble-free service.

For complete catalog, write to Walker-Turner Division, Kearney & Trecker Corporation, Plainfield, New Jersey.

Photo, upper left: Progressive machining stages at Harley-Davidson: multiple drilling, tapping and spot facing done entirely on set-ups of Walker-Turner 20" Drill Presses.

Photo, lower left: Facing internal hubs of cast aluminum. Facing tools are mounted in standard Walker-Turner 20" Drill Presses.

**Photo, upper right:* 20" Power Feed Drill Press Head, Model D-1101X, Hand Feed Model D-1100X. 4 ball bearings, 6" spindle travel. Five standard spindle speeds, 400 to 2600 r.p.m. with 1740 r.p.m. motor. Capacity .1" in cast iron, $\frac{3}{4}$ " in steel. . . . Slo-speed motor optional.



**MACHINE
TOOLS**

DRILL PRESSES—HAND AND POWER FEED • RADIAL DRILLS
RADIAL SAWS • BAND SAWS—FOR WOOD OR METAL
RADIAL METAL CUT-OFF MACHINES • MOTORS

4205

SOLE ONLY BY AUTHORIZED INDUSTRIAL MACHINERY DISTRIBUTORS

NOVEMBER, 1948

275

**AL "IF YOU
BUY FROM STOCK
FOR ORDINARY
APPLICATIONS"**



**LEN "IF YOU HAVE
AN ENGINEERING
JOB INVOLVING
FASTENERS"**

Depend on Allen

Buy your precision screws, socket keys, dowel pins and pipe plugs from your Allen dealer and get real service on a line of over 1500 standard items, accepted all over the world as "tops". There's no more respected guarantee of quality than the Allen trade mark.

Write the factory direct for authoritative and imaginative engineering service on fastenings, backed by unmatched breadth of screw manufacturing facilities. Write here, too, for descriptive folders you require.

WARNING

Allen-TYPE screws aren't necessarily Allen-MADE. Be sure to get genuine ALLENS SOLD ONLY THROUGH LEADING DISTRIBUTORS



ALLEN HANDI-HEX DRIVERS

For continuous use, driving smaller size hex socket screws. Blade adjustable, reversible and renewable. Speeds assembly and cuts cost.



**MEETING PROGRAMS ANNOUNCED
BY DENVER ASSOCIATION**

Programs for meetings up to March have been announced by the Purchasing Agents Association of Denver as follows:

November 11—Annual Executive Night, at which Dr. Robert Stearns, President, University of Colorado, will be the principal speaker.

December (day not yet decided upon)—Annual Christmas party.

January 13—Meeting devoted to the Educational Committee, with John Rork, University of Denver, in charge of the program.

February 10—Entertaining and educational movies.

The association played host to the District Three Fall Council meeting in Denver on October 22. An all-day session was held on that day at the Cosmopolitan hotel, and the association meeting was held in the evening at the Denver Athletic Club. Arthur G. Pearson, Director of Procurement, American Meat Institute, Chicago, was the principal speaker.

Officers of the association for 1948-49 are: Stan W. Swenson, president; T. G. Paterson, vice-president; G. L. Puckett, secretary-treasurer; L. A. Cowan, national director; and Wm. F. Edwards, alternate national director. Committee chairmen are: T. C. Paterson, program; Wm. F. Edwards, membership; R. Wayne Cargo, reception; T. J. Fitzgerald, auditing; Jack K. Naber, notification; Frank I. Ayer, plant visitation; L. R. Kendrick, business survey; Gene Taylor, commodity report; E. F. Saulsberry, local publicity; John Rork, local chairman of national committee on education; and Robert M. Baker, local education.

1 1 1

KEEFER AT ELMIRA MEETING

Ralph O. Keefer, president of the National Association of Purchasing Agents was guest and principal speaker at the first fall meeting of the Purchasing Agents Association of Elmira, held at the Mark Twain Hotel on September 21. Mr. Keefer's topic was "Our Professional Obligations."

1 1 1

**VOKES ELECTED PRESIDENT
OF DETROIT ASSOCIATION**

W. Edward Vokes, purchasing agent for the Goddard & Goddard Co., Detroit, has been elected president of the Purchasing Agents Association of Detroit. Other new officers are: Arthur D. Hummell, first vice-president; Walter E. Murray, second vice-president, and Andrew DeCarlo, treasurer.

1 1 1

**READING AND LEHIGH GROUPS
HOLD JOINT MEETING**

A joint dinner meeting of the Purchasing Agents Association of the Lehigh Valley and the Purchasing Agents Association of Reading was held on September 17 at Harker's Hollow, Phillipsburg, (Please turn to page 278)

Alloy Steels

Cut Costs



Alloy steels help keep rugged diesel tractors and bulldozers on the job—are used for transmission gears, recoil springs and fuel injection system parts. For any equipment that must absorb plenty of punishment, Republic metallurgists will be glad to suggest the proper alloy analysis to solve your particular problems.

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...because they last longer
in service—keep equipment
on the job—reduce maintenance



● Sudden stress reversals, shock, strain, vibration and overloading just can't be avoided when heavy work must be done. But . . . their costly *effects* can be minimized by using Republic Alloy Steels for vital working parts.

Uniform response to heat treatment assures hard surfaces without sacrifice of toughness at the core—a combination essential to long life for working surfaces. Furthermore, Republic Alloy Steels have that extra strength needed to withstand heavy strains . . . extra toughness to absorb severe jars and jolts. And, they stubbornly resist the attack of fatigue.

The correct alloy analysis, plus proper design, can help you cut final equipment costs through improved service, reduced maintenance expense and longer life. Republic, world's leading producer of alloy steels, is ready NOW to help you use them most efficiently and economically. Write us.

Republic

ALLOY STEELS



Other Republic Products include Carbon and Stainless Steels—Sheets, Strip, Plates, Pipe, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

Get these new facts on Arc Welding to decision-makers in your plant

This easy-to-take 'Pack
of Facts' makes the
information crystal-clear

Today's arc welding offers the key men in your plant unprecedented opportunities to cut costs... improve quality... lick difficult production problems. Get them the latest facts on this versatile industrial tool now!

IT'S EASY—General Electric, as a service to industry, has prepared the facts for you in visual terms that are easy-to-take...linger in the memory.

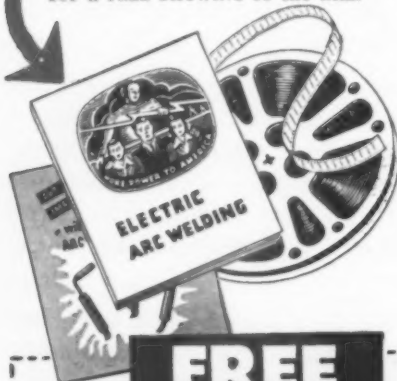
Here's what the arc welding program offers:

1. A fact-packed manual, describing practical applications of electric arc processes...production facts. Without sales bias, it surveys the field authoritatively.
2. A full-color, sound motion picture, running thirty minutes, which shows arc welding increasing production and cutting costs in plants like yours.
3. Fully-illustrated highlights booklets, for individual study and review.

Convince yourself first—

We want you to be the judge of what these arc welding facts can do. That's why we offer business executives this chance to examine the *Arc Welding Manual* without cost.

Showings Cost You Nothing—With your manual, we'll tell you how to arrange for a FREE SHOWING of the film.



Attach
to your
business
letterhead

**FREE
TO BUSINESS
MANAGEMENT**

General Electric Co.
Section 1684-2
Schenectady 5, N. Y.

Please mail me a sample copy of the G-E Arc Welding Manual without cost or obligation, with details on how I can arrange for a FREE SHOWING of the film. (Extra copies at regular manual price—\$1.25.)

Name _____ Title _____
Company _____
Street _____
City _____

GENERAL ELECTRIC

(Continued from page 276)

N. J. Joseph T. Murphy, Phillipsburg Supply Company, was chairman of the committee in charge.

The day's program featured a golf tournament and other entertainment. Guests and principal speakers at the evening dinner meeting were Ralph O. Keefer, N.A.P.A. national president, and J. S. Rutherford, vice-president of N.A.P.A. for District Eight.

BRITISH COLUMBIA ASSN. HOLDS FIRST MEETING

The first meeting of the new business year of the Purchasing Agents Association of British Columbia was held on September 14 in the Hotel Vancouver, Vancouver, B. C.

Ross Fraser, purchasing agent of Mills & Packers Ltd., spoke on "A Purchasing Agent's View of England Today." Mr. Fraser had just returned from a visit to England as a member of the British Columbia Trade Delegation sponsored by the Department of Trade & Commerce. He visited fairs in London and Birmingham, and also gained an excellent cross-section view of present production and general conditions.

"Operation Overflow," a sound film of the flood in the Fraser Valley was shown by the British Columbia Electric Railway Company Ltd. Harold H. Cake, National vice-president for District I, spoke briefly on national affairs and the national organization. New members were introduced, bringing the total to 174.

Appreciation was shown to A. Rus. Henshall of the British Columbia Electric Railway Company Ltd. for his contribution of five weeks association with the Red Cross. He was in charge of purchasing all household furnishings for flood relief in British Columbia. In addition, he organized retail outlets, distribution, storage and resale markups or commissions.

A number of Vancouver members attended the installation of the Victoria branch of the Purchasing Agents Association of British Columbia which was held on October 8.

An evening course in purchasing by the University of British Columbia is now in session under sponsorship of the association. Lectures given by Prof. R. A. Mahoney began on October 20 and will run for 16 weeks.

The association's annual Christmas party will be held in the ballroom of Hotel Vancouver on December 10.

TEACHING OF PURCHASING TOPIC AT N. E. MEETING

The first dinner meeting of the 44th association year of the New England Purchasing Agents Association was held in the Hotel Vendome, Boston, Mass. on October 11. Albert E. Everett, Dean of Northeastern University, was the principal speaker on the subject, "Is the Teaching of Purchasing Underemphasized in Our Business Schools." Mr. Everett has

(Please turn to page 282)

INDUSTRIAL FINISHES

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ENAMELS

THINNERS

SYNTHETICS

Approved Government Specifications

You can't beat Alaka's experience when it comes to finishes. Alaka has tailor-made more than 10,000 different industrial finishes. Alaka's research department has amassed a maximum of experience and facility to help you, whatever your finishing problem.

ALAKA Lacquers

QWIK-BAKE Synthetics

ALAKATONE Hammered Silver

SYNTHALAK Air-dried Synthetics

Custom Tailored Finishes
TO FIT YOUR REQUIREMENTS



LACQUER & CHEMICAL CORPORATION
222 FORTIETH ST., BROOKLYN 32, N. Y.



SINGLE OR
DOUBLE
CHAMFER

NUTS BRASS and ALUMINUM

MILLED FROM

THE BAR

(NOT PUNCHED)

SIZES 2 TO 12

AND 1/4"

DORIC

MANUFACTURING CO.

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PROVIDENCE 3, R. I.

STUMPED?

By a material problem?

PLAN WITH PLASTICS

SEND FOR THIS COMPLETE CATALOG



SYNTHANE

sheet proper

variety of grades

The properties of Synthane are such that you can select the grade that will give you the most economical solution to your problem. Most applications can be handled with grades K, SP, or AA.

finishes

Standard Synthane sheets are available in a variety of finishes. The most common is the standard finish, which is a smooth, non-reflective surface. Other finishes include a glossy finish, a matte finish, and a textured finish.

grades

K, SP, AA, K, SP, AA

K, SP, AA, K, SP, AA

sheet sizes

Standard Synthane sheets are available in a variety of sizes. The most common is the standard size, which is 24" x 100". Other sizes include 12" x 100", 18" x 100", and 30" x 100".

colors

All Synthane grades are available in a variety of colors. The most common is the standard color, which is a light gray. Other colors include white, black, and various shades of gray.

standard thickness table

Synthane sheets are furnished in standard thicknesses. The most common is the standard thickness, which is 1/8". Other thicknesses include 1/16", 1/4", and 3/8".

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SYNTHANE

TECHNICAL PLASTICS

EASILY MACHINED

SOUND ABSORBING

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THERMO-SETTING

HARD, ABRASION RESISTANT

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RESILIENT

LIGHTWEIGHT

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STRUCTURALLY STRONG

THIS COUPON BRINGS YOUR COPY

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Gentlemen:
Please send me without obligation a complete catalog of Synthane technical plastics.

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Solve your present and future design problems with
SYNTHANE Technical Plastics • Sheets • Rods • Tubes
Fabricated parts • Molded-laminated • Molded-macerated.
Consult us before you design and save time and trouble.

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Plastics where plastics belong



It is a combination of chemical, electrical, physical, and mechanical properties which makes Synthane laminated plastics valuable in so many applications. Synthane is moisture and corrosion resistant, easily machined and weighs only about half as much as aluminum. One of the best electrical insulators known, Synthane is hard, dense, strong and has excellent anti-frictional qualities. Synthane is also the set plastic . . . not affected by wide variations in temperature.

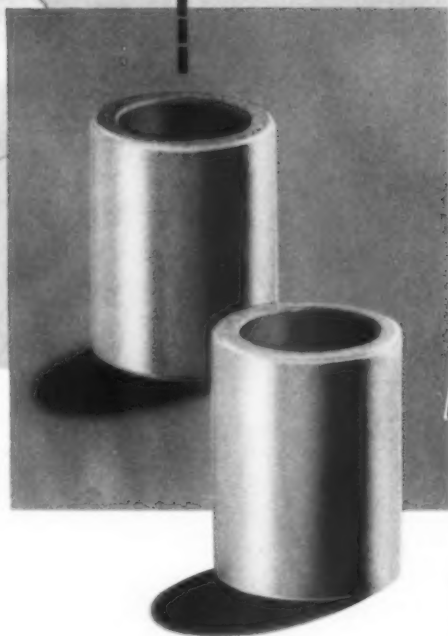
Among the more domestic occupations of our type of plastics are these bushings used in Dormeyer Food Mixers.



for electrical insulation, wear resistance and mechanical strength.

The brush holder bushings (above) utilize Synthane's outstanding electrical qualities—high dielectric strength, low moisture absorption, high dielectric constant—to insulate the brush mechanism. In addition, Synthane's unusual mechanical strength helps them render long and useful service without need of replacement. These and other hard-working properties also fit Synthane for use in fans, refrigerators, washing machines, vacuum cleaners, ironers, sewing machines and many other electrical appliances.

If there's a use for Synthane in your product, let us help you with design, materials or completely fabricated parts. Write for your free copy of our complete catalog of Synthane plastics today! Synthane Corporation, 7 River Road, Oaks, Pa.



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DESIGN • MATERIALS • FABRICATION • SHEETS • RODS • TUBES
FABRICATED PARTS • MOLDED-MACERATED • MOLDED-LAMINATED

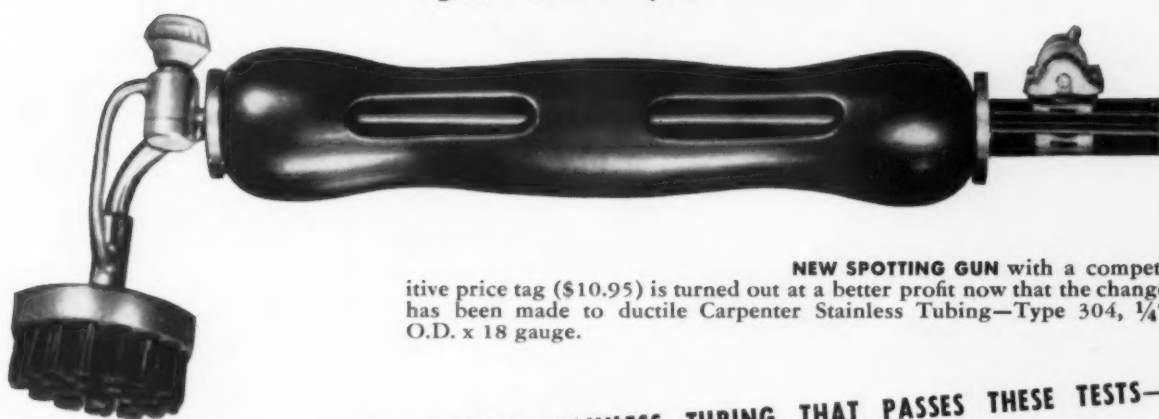
Here Is Why You REDUCE FABRICATION COSTS

by Changing to *Carpenter* STAINLESS TUBING . . .

You save production hours and eliminate tooling troubles on bending, expanding and machining jobs—because the uniform wall thickness throughout each length of Carpenter Stainless Tubing means easy fabrication.

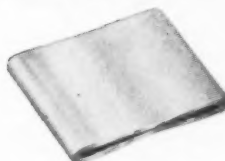
And you save on first cost when *Carpenter* is written on your Stainless Tubing orders. Uniform walls mean you can use lighter gauges without sacrificing strength.

To figure dollar savings you can make today, drop us a line. We will be glad to work with you.

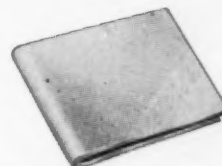


NEW SPOTTING GUN with a competitive price tag (\$10.95) is turned out at a better profit now that the change has been made to ductile Carpenter Stainless Tubing—Type 304, 1/4" O.D. x 18 gauge.

IT COSTS YOU LESS TO WORK WITH STAINLESS TUBING THAT PASSES THESE TESTS—



FLATTENING TEST protects you against the possibility of O.D. defects. Specimen is flattened between parallel plates until distance between plates is 3 times the tube's wall thickness. Any sign of cracking or flaws is cause for rejection.



TRANSVERSE BEND is used to double-check the I.D. structure of Carpenter Stainless Tubing. Sample is slit longitudinally and then bent as in the flattening test, but in the opposite direction.

These tests, made at several stages of manufacture, prove quality of the entire tube section and are made on every lot of full finished Carpenter Stainless Tubing before it is released for shipment.

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STAINLESS TUBING

"MORE THAN CORROSION RESISTANCE"



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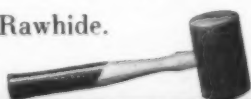
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LONG LIFE



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have malleable
iron heads with
replaceable coiled
rawhide faces.*

RAWHIDE is tops
for "soft" mallets and hammers.
And you can't beat *Chicago*
Rawhide. Tightly coiled, speci-
ally treated C/R surfaces won't
split, crumble or mushroom.
They absorb shock, deliver
powerful blows, protect delicate
surfaces, and stand up under
tough use. Always ask for
Chicago Rawhide.



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CHICAGO 22, ILLINOIS

*Other C/R maintenance products are: round, flat and twist belting; belt pins and belt lacings
gears, pinions and gear blanks; aprons and hand leathers; hydraulic packings.*

(Continued from page 278)

had a long career in both business and teaching, and has been actively interested in attempting to develop a closer relationship between education and business.

The afternoon conference, held in conjunction with the meeting, was resumed under the direction of Frank A. Jepson, Acushnet Process Co. The speaker was V. A. Dodds, president, Brown-Wales Company, and his subject was "Pricing Practices as Affected by the Basing Point Decisions."

The following committee chairmen appointments for the 1948-49 association year were recently announced by Daniel G. Donovan, president:

National Affairs: Kendrick Burns, S. D. Warren Co.;

Program: John R. Fuller, Sylvania Electric Products, Inc.;

Education: Frank A. Jepson, Acushnet Process Co.;

Business Survey: E. W. Mann, Bird Machine Co.;

Plant Visits: William H. McGinness, City of Cambridge;

Commodity Reports: H. M. Rainie, Boston & Maine R.R.;

Acquaintance and Publicity: Charles B. Whiteside, Tyer Rubber Co.;

Dinners: George F. Williams, Eastern Steamship Lines, Inc.;

Christmas Meeting: Leo Cotton, Berke Bros. Distilleries, Inc.;

District Conference: William Hoffman, Pacific Mills.

↑ ↑ ↑ "GOOD BUSINESS" FILM AT WASHINGTON MEETING

A regular meeting of the Purchasing Agents Association of Washington, D. C., was held on October 12, in the Crystal Room of the Burlington Hotel, with President K. M. Pardoe presiding. A talking motion picture entitled "It's Good Business", produced by the Bates Manufacturing Co. of New York, N. Y., was shown. The Women's Division, headed by Mrs. Jeannette D. Everhart, was present for the showing of the film.

↑ ↑ ↑ ALJIAN GUEST SPEAKER AT HAWAIIAN ASSN. MEETING

A special dinner meeting of the Purchasing Agents Association of Hawaii was held at the Kewalo Inn, Honolulu, on Monday evening, September 20. Guest speaker at the meeting was George W. Aljian, vice-president and purchasing agent of California and Hawaiian Sugar Refining Corp., who reported on the latest N.A.P.A. business survey.

A graphic description of the organization of N.A.P.A. was given by Mr. Aljian, and he described in detail the makeup and purpose of the national committee on education, of which he is chairman.

He advised the association to embark on a program of visual aid education and to arrange for courses in the principles and practice of purchasing.

Mr. Aljian also urged the gathering to give thought to the suggestion that future district council meetings and conferences of the N.A.P.A. be held in Honolulu.

take a tip from me —

**YOU CAN INCREASE YOUR
PRODUCTION AND DECREASE
YOUR COSTS TOO**

WITH TANTUNG!

Tantung, the most modern non-ferrous cast alloy, was specifically designed to fill the gap between conventional high speed tools and cemented carbides. Combining exceptionally high transverse rupture strength with a very high red hardness, Tantung can perform under heavier loads and higher speeds than are recommended for high speed steels.

In actual performance tests Company A reports:

"In facing a 3¾" malleable iron casting on a J & L Turret Lathe, Tantung doubled the speed and feed over high speed steel, and increased production from 30 to 90 pieces per day!"

In another test Company B reports:

"We had contemplated purchasing new machines in an effort to increase production, but . . . on testing a complete Tantung tool set-up, production was tripled and the new equipment orders were cancelled."

In these and in thousands of other actual

performance tests, Tantung has proven its superiority over conventional cutting tools.

Try Tantung on your troublesome and costly production problems today. Simply write or call your nearest V-R Field Engineer for courteous, experienced help in applying Tantung to your machining problems. Remember . . . there is always an effective and economical solution to any tooling problem with Tantung.

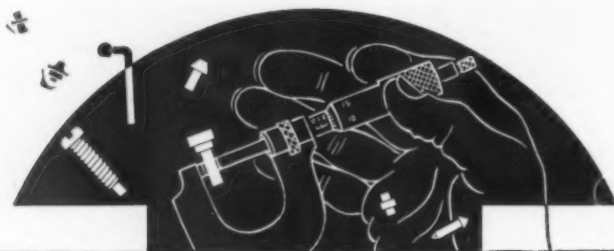


VASCOLOY-RAMET CORPORATION

**WAUKEGAN
ILLINOIS**

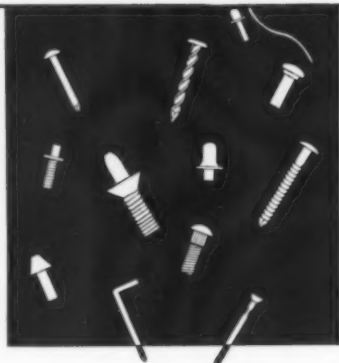
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special nails • rivets • screws • made to your order

HASSALL cold-heading may solve your immediate special part problem...Special nails, rivets and threaded parts made in diameters from 1/32" to 3/8"—lengths up to 7"...Rivets 3/32" diameter and smaller a specialty...Variety of metals, finishes and secondary operations...Economy, quality and quick delivery in large or small quantities...Tell us what you need...We will answer promptly. **ASK FOR FREE CATALOG.** 3-color Decimal Equivalents Wall Chart free on request.



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Manufacturers of Cold-Headed Specialties—Established 1850



THERE'S A **RIGHT** LOCK NUT FOR YOUR JOB!

Chances are four out of five it's An-cor-lox.
Check these advantages!

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| Can't shake loose | Competitively priced |
| Not affected by sawed-off or drilled bolts | Spins on stud by hand |
| Can be re-used many times | Locking ring forms a pressure seal |
| Locking ring on bottom, uses short stud | Not affected by temperature |
| Uses standard wrenches | Choice of finishes for corrosive or severe atmospheric conditions |
| Won't damage bolt or work | |



Get the right lock nut! We strongly urge a careful testing and will be glad to have our engineers check

special applications. Send today for our descriptive folder or free standard samples to fit your particular needs.

An-cor-lox
TRADE MARK REGISTERED

Lock Nuts

LAMINATED SHIM CO., Inc., An-cor-lox Division, 2411 Union St., Glenbrook, Conn.
AN-COR-LOX NUTS • SHIMS • SHIM STOCK • STAMPINGS

HANDBOOK FOR GUMMED TAPE USERS

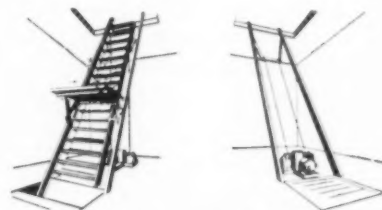
"Gummed Tape User's Handbook", 64-pages, has been published by Better Packages, Inc., Shelton, Conn., as a guide to selection, moistening, and application of gummed tape and the care of tape machines. In addition to discussing the use of gummed tape under average conditions, the Handbook takes up special moistening problems created by high-speed dispensing, heavy tapes, hard and cold water, and by various types of carton surface. Sections cover such subjects as tape application to slotted cartons, telescope boxes, parcel post packages, etc.

The handbook is minus advertising material. Paper-covered, the price is 50¢.

1 1 1

FLOOR-TO-FLOOR MATERIALS HANDLING CONVEYOR

Stairlevayor is the name of new materials handling device for handling materials of all kinds from floor to floor, announced by the Moto-Flow Company, Bay City, Michigan. The Stairlevayor can be used



Use over existing stairway Immediate installation.
Built-in steel stairway optional.

One ton or more from floor to floor!



in any open space or over an existing stairway. It is fully adjustable for width, length and pitch of stairway. It features a safety factor of 5 to 1, plus 45° angle pull to reduce load weight by one half. It is said to make for lower material handling costs.

1 1 1

NEW PHOTO COPY DEVELOPER

A new photo copy developer tradenamed Graph-O-Stat, which is said to cut development time approximately 15% and also give finer quality production, is being marketed by Philip A. Hunt Chemical Co., Brooklyn 22, N. Y. It is said to work equally well in hard or soft water, forming no spots, streaks or scum on prints. Graph-O-Stat is available in cartons of 24-10 quart size cans and 12-20 quart size cans, and in 50 and 100 gallon size drums.

(Please turn to page 286)

ASK
STOKES

DESIGN for Freedom from High Labor Cost

DESIGN for plastic production to save on material and machining. Design for automatic molding to reduce operating-time to the vanishing point.

Ask Stokes' engineers to help you at every point of planning; they have 20 years experience in plastic molding.

Expect long life, low cost, high production from Stokes Plastic Molding Machines, for this is the record of thousands of them throughout the world.

Especially, look to Stokes' engineers for authoritative recommendations on procedure, and on the type of equipment to be used. Stokes makes *every* type of Compression Molding Machine.

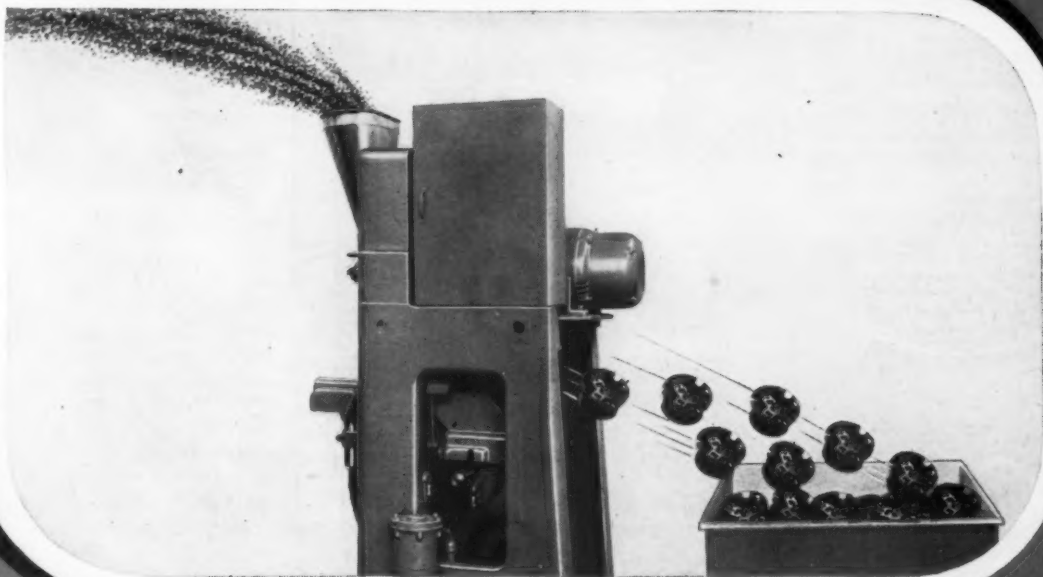
In addition to complete press service Stokes will supply product cost studies, and make or advise on mold design. Stokes breaks in new molds for automatic presses and sets machines for production . . . sends demonstrators to your plant to help train men for most profitable operation of Stokes Presses.

Stokes makes Semi-Automatic Plastic Molding Presses, Preforming Presses, Plunger Presses, Powder Metal and Ceramic Presses, Vacuum Pumps and Gages, High Vacuum Processing Equipment, Special Machines.

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HOW

This FREE BOOK

shows how to save
on NAME PLATES

Over 4500 shapes and sizes of name plates for which we have dies in stock are shown in this book. By choosing one of these designs you can effect a material saving. If you or your Engineering Department can make use of

it write us now for a copy of "Designs for Name plates"... Ecoa quality is enduring. Your request for a quotation is solicited—you will receive a prompt reply.



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Name Plates

ETCHING COMPANY OF AMERICA

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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

DILUTE IODINE EXCELS AS GERM KILLER

Although many new antibacterial products have been developed, few if any excel dilute solutions of iodine. A recent study made at the Philadelphia College of Pharmacy and Science has shown that dilute solutions of iodine (1:5000) had more effective antibacterial activity than solutions of free chlorine or free bromine.

Similar conclusions have been drawn in a report soon to be issued by the Hospital Bureau on "Germicides, Antiseptics and Disinfectants for Hospital Use." Several authorities agree that dilute solutions of iodine have not received the emphasis they should have as a germicidal agent.

Solutions of free iodine, 1:5000 for use as an antiseptic wash or for irrigations can be readily prepared by diluting 1 cc. of 2 percent iodine solution (N.F.VIII) and/or 2 percent iodine tincture (U.S.P. XIII) to 100 cc. with distilled water or isotonic solution of sodium chloride. *Bureau News*, Hospital Bureau of Standards and Supplies.

TRANSPARENT CARRIERS FOR PNEUMATIC SYSTEMS



The illustration shows transparent pneumatic conveyors, with cellulose acetate butyrate (Tenite) bodies, made by the Standard Conveyor Co. of North St. Paul, Minn. The transparent body enables operators to tell at once whether the carrier has anything in it or not. The plastic body has high impact strength and easily withstands the top-speed jolts and jars which are the lot of pneumatic carriers. The product is available in various diameters in round or oval shape.

"MOONGLO" JOINS FORMICA'S PLASTIC LAMINATES

"Moonglo" is the name of the latest design added to The Formica Company's decorative laminates. The new laminate involves the science of optics in its design and decorative appeal. It is offered in six colors and brings the number of patterns and colors in Formica laminates to more than sixty.

(Please turn to page 288)

1

This emblem



stands for
**MINNESOTA MINING &
 MANUFACTURING CO.**
 General Offices and Plant, St. Paul, Minn.

3M Sales Offices and Warehouses at:

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 BUFFALO 3, NEW YORK
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 DALLAS 1, TEXAS
 DENVER, COLO.
 DETROIT 2, MICH.
 GRAND RAPIDS, MICH.
 HIGH POINT, N. C.
 NEW YORK 13, N. Y.
 PHILADELPHIA 8, PA.
 PITTSBURGH 19, PA.
 ST. LOUIS 8, MO.
 ST. PAUL 1 (SALES OFFICE)
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 SAN FRANCISCO 10, CALIF.
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Under the 3M brand:

- 3M Abrasive Paper and Cloth
- 3M Adhesives—rubber or resin base
- 3M Roofing Granules
- 3M Iron Oxide and Chrome Oxide Pigments
- 3M Floor Seal
- 3M Fibre Packing
- 3M Silane
- 3M Anti-Corrosion Coating

Under the "Scotch" brand:

- "Scotch" Cellulose Tape
- "Scotch" Masking Tape
- "Scotch" Electrical Tape
- "Scotch" Locker Tape
- "Scotch" Shoe Tape
- "Scotch" Plastic Film Tape
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- "Scotch" Decorators Tape
- "Scotch" Sound Recording Tape

Other 3M Products include:

- "Scotchlite" Reflective Sheeting
- "Spherekote" Tympan Paper
- "Honite" Abrasive Pebbles
- "Mistlon" Plastic Ribbon
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- "Safety-Walk" Non-Slip Surfacing
- "Scotch-Weld" Bonding Film
- "Scotch Top" Plastic Wall
- "Poro-cel" Hospital Sheeting



MINNESOTA MINING & MFG. Co.

Saint Paul 6, Minn.



Keystone's new Galvanized MB Wire offers improved corrosion resistance. It gives added life and strength to mechanical springs subject to rust and corrosion. This is due to Keystone's unique method of galvanizing the wire **before** it is cold-drawn. The drawing process smooths and hardens the galvanized finish, increasing its lasting qualities remarkably. Other advantages are its lustre-bright, shiny smooth finish . . . even, uniform temper . . . and high tensile strength.

Whatever your industrial wire problem might be, Keystone's wire specialists can help solve them for you. You are welcome to call on them at any time.

KEYSTONE STEEL & WIRE COMPANY
PEORIA 7, ILLINOIS

STANDARDS OF HYDRAULIC INSTITUTE EIGHTH EDITION

The Eighth Edition of the Standards of Hydraulic Institute, is now available from the Hydraulic Institute, 90 West Street, New York 6, N. Y., at \$3.00 per copy, including delivery.

The new edition, an 8½" x 11" publication, consists of six sections: A General Section, a Data Section, a Centrifugal Pump Section, a Rotary Pump Section, a Reciprocating Pump Section, and an entirely new section containing Tentative Standards on Pipe Friction.

The three sections covering the three broad classifications of industrial pumps each contain their own Test Code.

1 1 1

DRAVO DEVELOPS COAL-FIRED WARM AIR SPACE HEATER

Illustration shows coal-fired warm air space heater developed by the Dravo Corp., Dravo Building, Pittsburgh 22, Pa., which can be converted for firing with gas or oil. The heater has a stainless steel combustion chamber, which is said to increase service



Heater is also adaptable for process drying and curing.

life and eliminate substantial amount of the customary side wall refractory. Heater is available in two output capacities, 1,250,000 btu per hour, and 1,500,000 btu per hour. Fuel consumption for former, based on coal having heat value of 12,500 btu per lb. is estimated at 133 lbs. per hour. Heater can be used with or without ducts, and can be adapted for bringing in and heating outside air. Standard equipment includes hopper model bituminous coal stoker. Anthracite or bin feed stokers can be supplied. Operation of the fans and stoker is controlled by room temperature thermostats. It is usable for summer ventilating and is adaptable for process drying and curing.

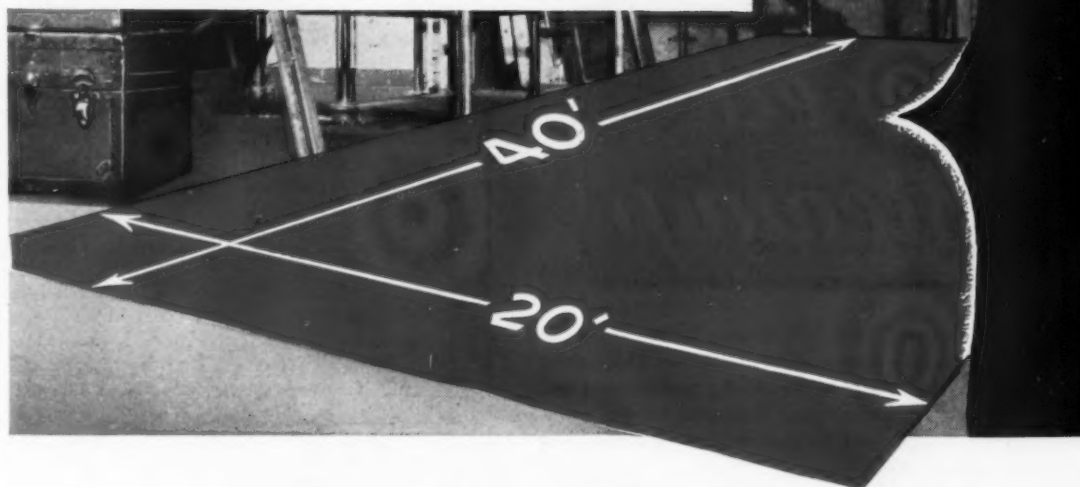
1 1 1

POWDER METALLURGY

One of the earliest commercial applications of powder metallurgy was in the production of filaments for light bulbs, says the Metallurgical Research Laboratories of the Sylvania Electric Products, Inc. Pure tungsten metal, too hard and too brittle for conventional metal working is produced in a pure powdered form, compressed and then fused or sintered by the passage of a heavy electric current
(Please turn to page 290)



**800 sq. ft. of "dead"
floor space**



. . . revived for Production!

Increased production at the Wagner Electric Corp., St. Louis, Mo. called for the installation of a new bank of voltage regulators in the power house. Where to put them was the stopper. Enlarging the building was out of the question. Floor space was already at a premium . . . except for the area occupied by two 38-foot center belts driving the present generators.

The plant engineer with the help of his local Dayton V-Belt Distributor redesigned the drive, replaced the space consuming flat belts with Dayton V-Belt Drives. Operating on 6-foot centers, they

required only half the area. 800 sq. ft. of dead space was revived...more than enough for the regulators.

Of added importance, generator starting current is 10 to 15 amperes lower. No warmup time is needed. Belt slippage is eliminated and maintenance reduced to a minimum.

Dayton V-Belts can bring new operating economies to your plant. Your local Dayton V-Belt Distributor is as near as your telephone. He has the specialized knowledge to help you select the right belt for the right job. And he can service you immediately . . . right from stock. Call him today. *Dayton Rubber, Dayton 1, Ohio.*

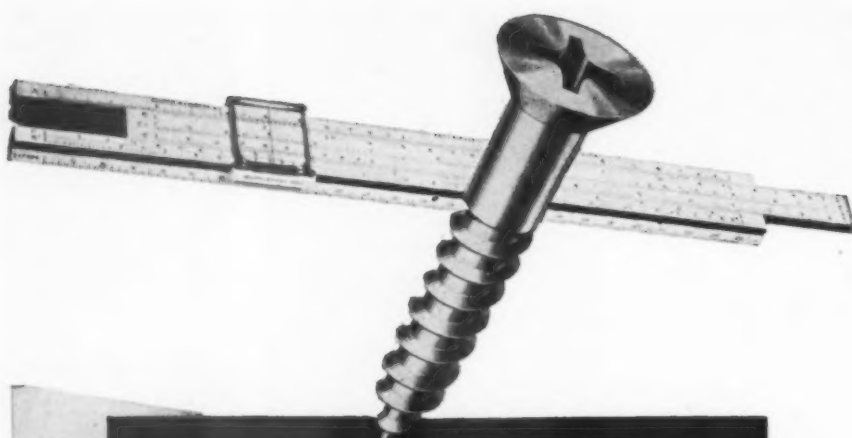
Branch Offices: Atlanta, Boston, Chicago, Cleveland, Dallas, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, St. Louis



V-Belt Buyers! A leading mill supply house near you offers specialized Dayton V-Belt service. Look for the name under the trade name heading "Dayton V-Belts" in the yellow pages of your telephone directory.

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER



HOLTITE Engineered Fastenings

Reg. U.S. Pat Off

The completely scientific production of HOLTITE screws, bolts and allied fastenings is closely supervised through every operation by our skilled Engineering Staff. From the analysis of raw material to the final hardening, heat-treating and finishing every operation is meticulously checked and inspected by the latest scientific devices. Modern comparators throughout the production line supplement inspection devices to insure absolute precision.

Aided by special research in extensive chemical and metallurgical laboratories, our engineers are constantly improving methods, equipment and products to provide users with the most rugged, uniform and accurate fastenings science can devise.

HOLTITE Engineered Fastenings effect tighter, stronger, vibration-defying assemblies with cost-cutting efficiency. Select your next requirements from HOLTITE'S complete line . . . your time study records will prove the wisdom of their continued use.



CONTINENTAL SCREW CO.

New Bedford,
Mass., U.S.A.

(Continued from page 288)

which raises it to incandescence in a hydrogen atmosphere. Similar processes have been developed for practical commercial application of other hitherto unusable but valuable refractory metals including tantalum, molybdenum, columbium and titanium.

Particularly during the last decade powder metallurgy techniques for the more common metals have been adopted. Products produced today by this new science and art of sintering include many for the automotive, electrical and aviation industries including timing gears, cams, self lubricating bearings and tungsten and tantalum carbide high speed cutting tools.

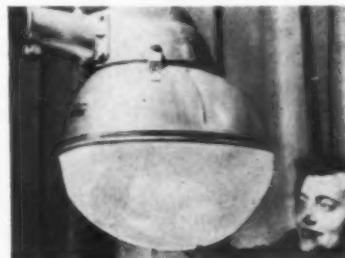
Advantage of the technique is saving of material, preforming for minimum machining, and, in the case of highly refractory metals, working otherwise impossible due to physical properties.

Behind this modern industrial technique is the science of the physical structure of metals, their lattice structure, adhesion of particles and physical distortions resulting from sintering in different conditions of stress and temperature.



NEW LARGE LIGHT LUMINAIRE

New luminaire designed to distribute light from large mercury and incandescent lamps with a minimum glare is announced by General Electric's Lighting and Rectifier Divisions, Schenectady, N. Y. Design-



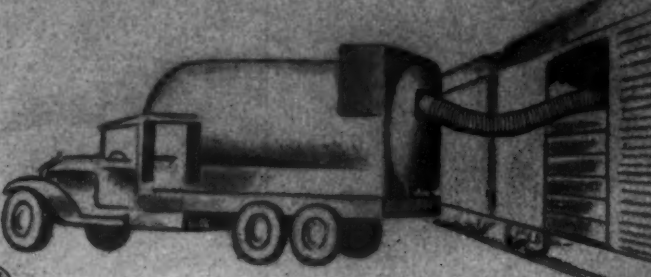
G-E Form 109 luminaire which is designed to distribute light from large mercury and incandescent lamps with a minimum of glare.

nated as Form 109, the luminaire is available in a wide variety of mountings, including the slip fitter type in 1 1/4 in. and 2-in. sizes. It will accommodate the G-E 16,000 lumen Type FH-1 and 21,000 lumen Type EH-1 mercury lamps in a horizontal position or the 7-in. and 9-1/2-in. light center filament lamps. It is characterized as being the first to burn either 10,000 or 16,000 or 21,000 lumen mercury lamps in the horizontal position; and first to utilize so completely the potentialities of mercury light sources. Bulletin GEA-5142 gives complete information about the luminaire.

**IDLE SURPLUS IS
IDLE CAPITAL! CONVERT IT
TO CASH . . . LIST YOUR
COMPANY'S SURPLUS IN
PURCHASING'S CLASSIFIED
SECTION NEXT MONTH
SEE PAGE 358**



SHIP
UNLOADING



GRAIN UNLOADING



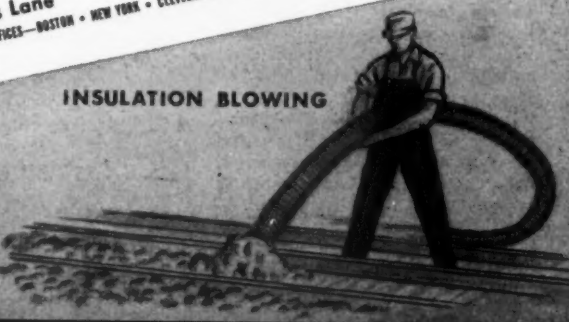
ASH
REMOVAL



DUST
REMOVAL



SLAG REMOVAL



INSULATION BLOWING



Penflex "TWIN-LOK"

REVOLUTIONARY NEW DEVELOPMENT FOR EASY TRANSMISSION OF MATERIAL

Here's a new and different type of flexible metal hose scientifically designed to provide smooth flowing, flexible transmission of grain, dust, slag, insulation and other granular material. It is the new and revolutionary Penflex "TWIN-LOK"!

This new Penflex development offers all of the ruggedness of the well-known Penflex interlocked construction... plus an inner lining of metal that makes the inside of the tubing free of any obstructions... allows smooth, easy flow of material... reduces friction to a minimum. At the same time, this extra lining greatly reinforces the tubing without materially reducing the flexibility. Result is a new tubing that offers every industry-moving material pneumatically—real savings in time, money and maintenance.

Penflex "TWIN-LOK" is just another of the many developments of Penflex "Flexineering" which offers you complete service and products for the flexible, leak-proof transmission of liquids, air, gas or light solids. Penflex has a complete line of flexible metal hose, tubing and couplings from 1/4" I. D. to 30" for all purposes.

Write today for new catalog on Penflex "TWIN-LOK."

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HEART OF INDUSTRY'S LIFE LINES

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For better rubberized Work Gloves, look for the **HOOD Trade Mark**—a sign of quality since 1896. Styles to suit every requirement. Send for folder. Order from your jobber.

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When the Order is for a Lantern

ORDER A *Big Beam* Portable Electric Hand Lamp



Model 211

Big Beam is the accepted standard in portable illumination. A powerful, searchlight beam or a bright spread light—either is instantly available through the convenient, finger-tip control on the adjustable head. These lights are well built for long service, attractively finished, weatherproof, and lightweight for easy carrying.

A shoulder strap, hold-down bracket, colored lens, and other accessories increase the use and convenience of all Big Beam Models.

Many Dry-Cell and Storage Battery Models.

Ask your supplier, or write direct for full particulars.

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A MACHINE SCREW SHEAR* THAT REALLY WORKS! NO DAMAGED THREADS NO BURRS



AMP

*SHEARS SIZES

#10-24, #10-32, #8-32,
#6-32, and #4-40 brass
or steel

"SHEARITE" Does Easily the Toughest "Little Job" in the Shop

Just thread the screw into proper threaded cutter hole (size is marked on tool); turn into hole until screw is desired length; squeeze tool handles together. Result: screw is sheared right where you want it—not a thread damaged—no burrs. Hardened steel jaws assure sharp shearing, wire cutting, and wire stripping edges. Handles are insulated.

"SHEARITE" HAND TOOL

★ Shears five sizes of machine screws without damage to threads.

★ Cuts wire.

★ Strips wire.

"SHEARITE" Costs But
\$3.95 each. Well boxed.

Send me AMP "SHEARITE"
Machine screw cutters at
\$3.95 each.

(Enclosed find* check,
money order or cash.)

*Orders on Company Purchase Orders will be billed.

AIRCRAFT-MARINE PRODUCTS Inc.

1319 N. 4th Street, Harrisburg, Pennsylvania

Sole Canadian Representative: F. Manley & Sons, Ltd., Toronto, Ont., Canada

NEW LINE OF FAIRBANKS- MORSE MOTOR GEARS

Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago, Ill., announce that their axial air gap motor is now available as a motor reducer. The outstanding features of the motor are space and weight reduction, the motor being less than half the size of the conventional type motor and weighing less by approximately one-third.

The company states that the new motorgear with axial air gap motor is the most compact gear motor offered. It is available in ratings from $\frac{3}{4}$ to 10 hp. The units are symmetrical in design with no separate right hand or left hand assemblies. The motor may be removed from the gear housing and run separately. The new



The new motorgear is definitely compact.

motorgear employs two ratios of single helical gears with hardened and accurately shaved teeth arranged in simple gear trains. It does not employ planetary gearing of any kind. The motor and gear shafts are parallel, with the center line of the motor coinciding with the centerline of the low speed shaft.

The gear housing is a sturdy one-piece casting with all four feet included in the same casting, the four feet being always in line.

The new motorgear is suitable for horizontal mounting, preferably on a level floor, but provisions can be made for wall, ceiling or angle mounting, provided the shafts remain horizontal.

TRANSPARENT MIRROR

A new large size of transparent mirror, 30 x 60 inches, of polished plate glass $\frac{13}{64}$ inch in thickness, is now being produced at the Brackenridge, Pa., plant of Liberty Mirror Division of Libbey-Owens-Ford Glass Company. When installed in a wall between a well-lighted room and one that is darkened the transparent mirror appears like any other mirror to the lighted room occupants. It becomes transparent to those in the less-lighted room where observers may see into the other room though persons in the well-lighted room are unaware that anyone may be looking through the mirror. The chromium deposit on one side of the glass is so thin that it is hard to detect with the eye. Stock sheets of polished plate glass $\frac{1}{8}$ " thick, 30 x 40 in. 12 x 40 in. and 20 x 40 in. are also available.

(Please turn to page 294)

**NOW...take this Handy Way
to Count anything
you want!**



...Use a Veeder-Root Hand Tally

GET AN ACCURATE "RULE OF THUMB" on anything you want to count, from poles to people... with this compact precision instrument (shown actual size). It's quicker than a pencil... more reliable than your memory... and can be comfortably carried in your pocket at all times.

Every time you press the thumb-lever, another count is added, all the way up to 10,000. Then turn the knurled knob *once*, and all figures reset to zero. This is the "counter of countless uses"... an indispensable daily companion for anyone concerned with figures. Get a Veeder-Root Hand Tally today... or order it direct.

VEEDER-ROOT INC., HARTFORD 2, CONN.

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Look for this Box at Hard-
ware and Sporting Goods Stores
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and Hotel Supply Houses

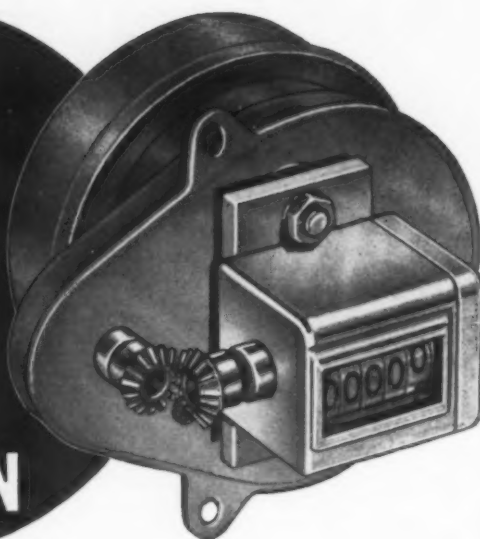
...only **\$7.50**



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Traffic • Packages • Livestock • Inventories • Phone Calls • Poles • Trees
Shrubs • Tickets • Attendance at Games and other events • Restaurant Servings
Equipment Stocks • Idle Machines in Plants • or anything else you may want to count!

**YOU CAN
ALWAYS
COUNT
ON HAYDON**



ELAPSED TIME INDICATORS

Haydon timing motors assembled to cyclometer-type counters make ideal non-reset elapsed time indicators for the operation of all machinery and equipment. Both standard models (5701), and brake units (5702) for extreme accuracy at higher speeds.

Overall dimensions: 2-1/8" x 2-1/2" x 2-5/16"

Unit No.	Time Registered	Total Register	Color of Figures
5701-1/6	hrs. and tenths of hrs.	9,999.9 hrs.	tenths—red hrs.—black
5701-1/60	hrs.	99,999 hrs.	all black
5702-10	mins. and tenths of mins.	9,999.9 min.	tenths—red mins. black
5702-1	mins.	99,999 min.	all black
5702-1/6	hrs. and tenths of hrs.	9,999.9 hrs.	tenths—red hrs.—black
5702-1/60	hrs.	99,999 hrs.	all black
VOLTAGE: 110, 220 volts		FREQUENCY: 50, 60 cycles	

(When ordering, specify unit number, voltage and frequency.)

Haydon engineers are prepared to assist with special requirements. For further information or expert field service, write to our factory. For immediate reference, see Haydon Catalog in Sweet's File for Product Designers.

WRITE 2211 ELM STREET, TORRINGTON, CONNECTICUT

HAYDON

MANUFACTURING COMPANY, INC.

TORRINGTON,

CONNECTICUT

HARNESS TIME TO

YOUR PRODUCTS

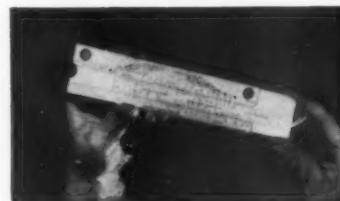
SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION

NEW PRINCIPLE OF OPERATING FLUORESCENT LAMPS

A new principle of operating fluorescent lamps at high frequencies, was recently installed in a Chicago bus, according to announcement by the Lamp News Bureau of the General Electric Company. Instead of the 60-cycle alternating current normally used in lighting applications, the lighting of the bus with two rows of "Slimline" fluorescent lamps, is operated at frequencies ranging from 80 to 500 cycles. Advantages of the high-frequency operation are said to be an eight percent increase in lamp efficiency, the use of smaller and cheaper accessory equipment than the standard 6-cycle types now in use, the ability to start the lamps at low voltages, and low overall cost of installation and maintenance. The system provides 25 foot-candles of illumination. Source of power is a 150-ampere variable frequency alternating current generator driven directly from the engine which not only supplies current directly to the lights but also keeps the battery fully charged while supplying power for the air conditioning and the heater motor.

The bus installation is seen not only as establishing a new standard for motor coach light, but also as being the first of many commercial and industrial uses for the system of operating fluorescent lamps at high frequencies.

NEW PLATER'S COMPUTER

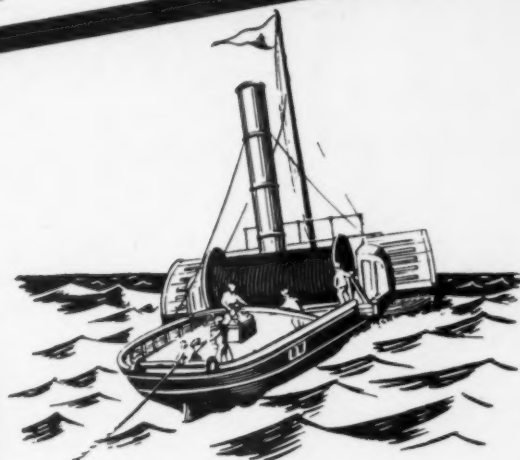


A new Jernstedt Plater's Computer, the simplified and improved 1948 model, has been developed, which is available from the Hanson-Van Winkle-Munning Company, Matawan, N. J. The new Jernstedt Computer does for the plater what a slide rule does for the engineer. In a few seconds, the user can determine:

- (1) Plating time required to deposit a given thickness of any metal.
- (2) Current density required to produce a deposit of given thickness.
- (3) Thickness of deposit resulting from an established plating time at a known current density.
- (4) Usual cathode efficiencies of all modern electroplating solutions.
- (5) Ampere minutes per square foot to deposit .0001" of all commonly used solutions, at usual cathode efficiencies.
- (6) Temperature conversion scale, degrees Fahrenheit—degrees Centigrade.

The Computer measures only 6 1/4" x 1 1/2" and comes in an attractive vinyl carrying case. The selling price is only \$2, a figure made possible by volume production and improvement in manufacturing technique.

BACK IN THE 1880's



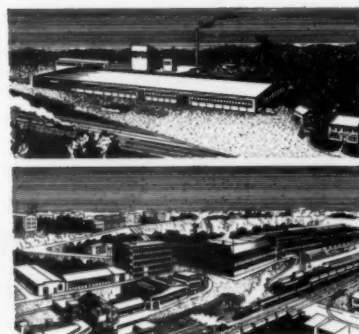
**WHEN THE FIRST
TRANSATLANTIC
CABLE WAS LAID**

KOVEN

**WAS MAKING INDIVIDUALIZED
EQUIPMENT PARTS**

History recorded vital communications progress during the eighties. And KOVEN, too, made its mark for the day by gaining wide recognition as a fabricator of individualized equipment parts that saved time and money for numerous equipment manufacturers. With our efficiency-perfected techniques we can produce such parts more speedily and often at a lower cost than they could be made in your own plant. Why not consult us now? Our 67 years of experience, the skill of our craftsmen and the modern facilities of two huge plants are at your disposal.

L. O. KOVEN & BRO., Inc.
154 Ogden Ave., Jersey City 7, N. J.



PLANTS:
Jersey City, N. J. Dover, N. J.

Pilot plant unit. Stainless steel jacketed kettle (20 gal. capacity). Working pressure in jacket 125 P. S. I. Vacuum kettle. With agitator, stainless steel condenser, descending type decanter and a receiver. All stainless steel piping.

KOVEN FOR INDIVIDUALIZED EQUIPMENT PARTS SINCE 1881

PERSONALITIES *in the* NEWS

Kenneth W. Short has been appointed acting Purchasing Agent for Monsanto Chemical Company's Plastics Division, Springfield, Mass., according to an an-



Kenneth W. Short

nouncement by C. A. Wolfe, Vice President and Director of Purchases and Traffic. He succeeds Glenn M. Bullard who retired.

Mr. Short, senior buyer for the division since 1942, has been Assistant Purchasing Agent since August of this year. He joined the receiving department of the Fiberloid Corporation, which later became Monsanto's Plastics Division, in 1924, and was transferred to the purchasing department in 1933.

Mr. Bullard had been Purchasing Agent for the division since 1917.

V. L. Beck has been named to succeed Edward T. Taylor as Purchasing Agent for the North Carolina Finishing Company, Salisbury, N. C. Mr. Taylor, Purchasing Agent since 1938, has been elected secretary and assistant treasurer of the company by the board of directors.

Arthur G. Hopcraft, Purchasing Agent for Cleveland Worm & Gear Co., Cleveland, O., was the guest speaker at a recent meeting of the Toledo (O.) Sales Executives' Club. Mr. Hopcraft's subject was, "The Purchasing Agent Looks at the Sales Manager."

J. P. Connors has been appointed Purchasing Agent at the Buenos Aires, Argentina, plant of the Goodyear Tire & Rubber Company. Mr. Connors, who joined Goodyear in 1933, was serving as section head in the materials contact division of interplant relations at the time of the appointment.

Gordon S. Yost, for many years Purchasing Agent for the Toledo Scale Company, has resigned to accept a position as Assistant Purchasing Agent for Willys-Overland Motors, Inc., Toledo, O. Mr. Yost is an active member and past president of the Toledo Purchasing Agents Association, and has also served on the National Executive Committee of the N. A. P. A. as Vice President for District No. 6.

Brigadier General Letcher O. Grice, Commanding General, Quartermaster Purchasing Office, New York, N. Y., was recently honored with a testimonial luncheon given at the Masonic Club by the Textile, Gar-



Brig. Gen. L. O. Grice

ment and Allied Industries of New York. The luncheon was in recognition of raising the status of the Quartermaster office by having a general officer in command, and the promotion of General Grice to that post.

Robert L. Lehr has been named Purchasing Agent for North American Refractories Co., Cleveland, O., succeeding George C. McClure, retired.

Frank X. Heindl, Assistant Purchasing Agent for Pratt & Lambert, Inc., Buffalo, N. Y. was one of three company employees honored recently for long service records by a banquet at Hotel Statler, Buffalo. Mr. Heindl has been with the company 20 years.

Kenneth W. Lewis has been appointed Purchasing Agent and Credit Manager for Fairmont Foods Corp., Columbus, O., succeeding R. T. Kersey who has retired to enter private business.

Joseph E. Jennings and John Nurney have been named as Assistant Purchasing Agents of the Leeds & Northrup Company, Philadelphia, Pa., in a reorganization of the Purchasing Department brought about by the retirement of Sidney B. Rickersberg, Assistant Purchasing Agent.

Mr. Jennings will be responsible for the technical phase of the work, covering rejections and quality control, changes in design, and new materials. He will be assisted by S. L. Pierce, engineer.

Mr. Nurney will be responsible for the production phase of the work, covering production orders, price checking, scheduling, transportation and receiving.

W. F. Schaffer will continue to be the buyer of supplies, equipment and experimental material. He will report to Mr. Jennings. C. J. Williams will continue to be responsible for the follow-up on all orders and will report to Mr. Nurney.

Mr. Rickersberg retired recently after 25 years' service with the company. He was honored by a meeting of a large group of his associates, at which he was presented with an inscribed watch.

George J. Alles has been appointed Purchasing Agent for American Viscose Corp., Philadelphia, Pa. He succeeds J. LeRoy Shade, who has taken an extended leave of absence owing to illness. Mr. Alles has been manager of the corporation's Sylvania division plant at Fredericksburg, Va.

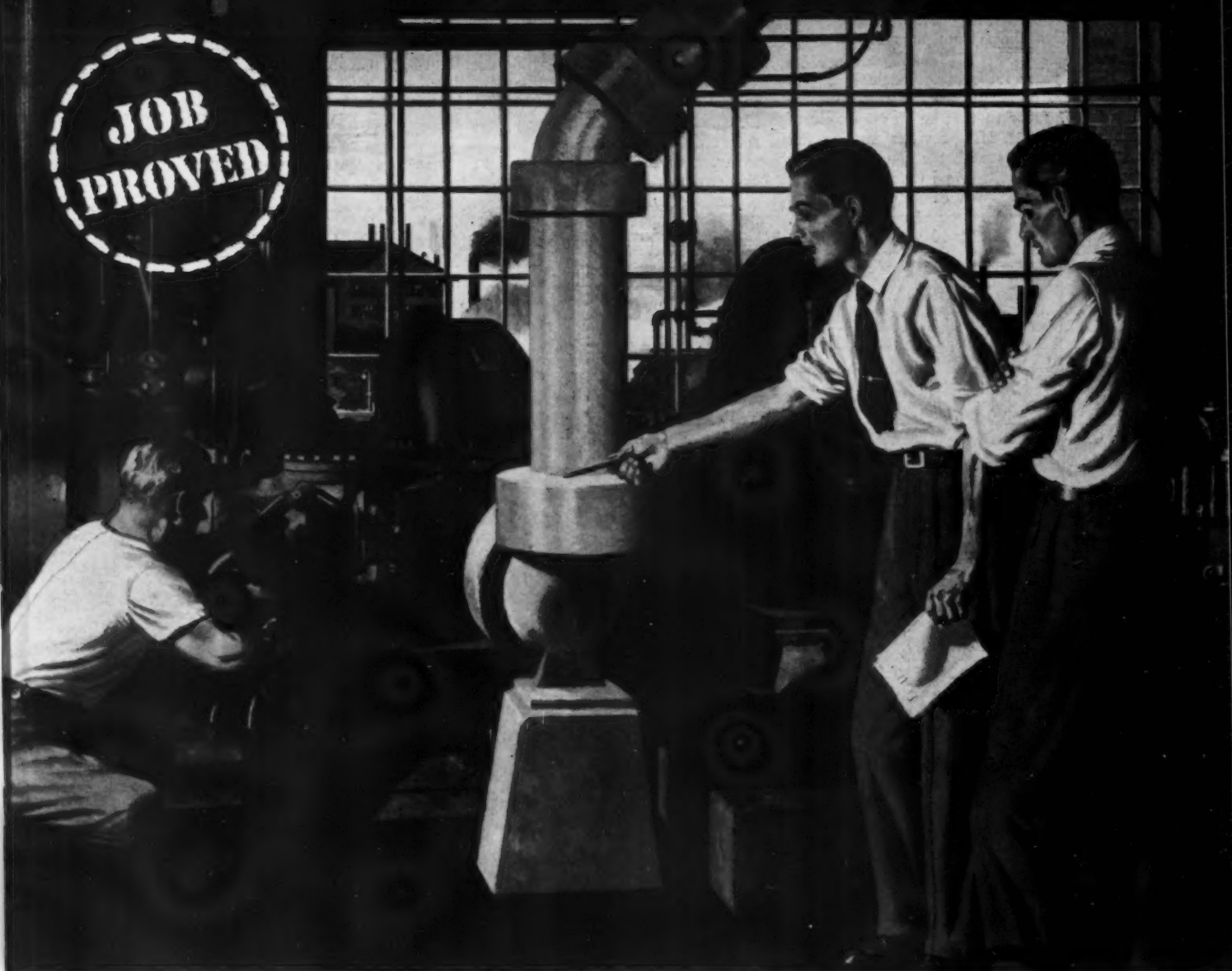
Laurence F. Kedzie has been appointed Assistant Director of Purchases, and Jack A. Faulkner, Purchasing Agent, for Ben-



Laurence F. Kedzie

dix Home Appliances, Inc., South Bend, Ind. The appointments were announced by M. R. Denison, Director of Purchases.

(Please turn to page 298)



TURBINE INVESTMENT PROTECTED BY SUNVIS

After Rigorous Service, Bearings and Reduction Gears Free of Wear, Rust, and Corrosion

In 1945, a paper mill resumed operations. Essential to production plans was a steam turbine which had been shut down for several years. The turbine represented a substantial investment and would take a long time to replace should anything go wrong, so the management gave the matter of lubrication careful study. Finally, the mill decided in favor of a Sun Engineer's recommendation—one of the Sunvis 900 Oils for both the tur-

bine's circulating system and the bath-lubricated reduction unit.

Today, the initial charge of Sunvis 900 Oil—with only slight makeup—is still in service. Regular Sun laboratory tests show this fortified oil to be in excellent condition. Inspection of the equipment reveals no measurable wear. During the past two summers, the turbine was exposed to condensation when it stood idle for a few months. Despite this intermittent operation,

gears and bearings show no rust, and no corrosion.

"Job Proved" Sun Products are giving similar, outstanding service in every kind of industry: Using a Sun Processing Aid, a rubber factory increased extrusion speed 7%, and improved quality; a machine shop making radio parts tripled tool life with a Sun Cutting Oil. For literature about the rust- and corrosion-inhibited Sunvis 900 Oils, or other Sun "Job Proved" Products, write Dept. PU-11

SUN OIL COMPANY • Philadelphia 3, Pa.
In Canada: Sun Oil Company, Ltd., Toronto and Montreal

SUN PETROLEUM PRODUCTS
"JOB PROVED" IN EVERY INDUSTRY



(Continued from page 296)

An employee of the company since its founding year, 1937, Mr. Kedzie had been Assistant Purchasing Agent since February, 1946. Prior to that he was a buyer of production parts. His previous employment included 10 years with the Packard Motor Company, Detroit, Assistant Purchasing Agent; and salesman of steel shapes for the Dahlstrom Metallic Door Company, Jamestown, N. Y., for 10 years.



Jack A. Faulkner

Mr. Faulkner joined the company as supervisor of material control in 1944. For the past 18 months he has been a buyer. Previous affiliations include the Bendix Products division of the Bendix Aviation Corporation and Studebaker Corporation.

Doris Goodwin has been named to succeed Edward Bush as Purchasing Agent for the Michael Yundt Co., Waukesha, Wis. Miss Goodwin has been associated with the company for the past 15 years, and recently has been acting in the capacity of Assistant Purchasing Agent.

Allan Maynard has joined ABC-Hollywood as Purchasing Agent for the Hollywood-Los Angeles, Calif. area. He was formerly Purchasing Agent and Location Auditor for Universal Pictures Co.

W. R. Burnet, Purchasing Agent of the Imperial Brass Mfg. Company, and president of the Purchasing Agents Association of Chicago, was a panel speaker at the annual state Conference of Credit Men held in Chicago at the Hotel Morrison on October 20.

Russell Runyon has been placed in charge of Purchasing at the Hazelton, Pa. plant of Oliver United Filters, Inc., of New



Russell Runyon

York, Chicago and Oakland. Mr. Runyon had been connected with the company's purchasing department in Oakland, Calif., plant since 1936.

Thomas A. Hunter has been promoted to the post of Purchasing Agent for Burlington Mills Corporation, Greensboro, N. C. He succeeds J. Saunders Williamson, resigned.

William K. MacMahon has been named to succeed C. P. Carpenter who recently retired as Purchasing Agent for the Washington Gas Light Company, Washington, D. C. Mr. MacMahon's new title is Director of Purchases.

Mr. MacMahon was educated at Massachusetts Institute of Technology in Engineering Administration. Before joining the gas company, he was engaged in the building and contracting business, and during 1929 and 1930 was Chief of Home Builders Section, United States Division of Building and Housing. Since his association with the company he has at various times held the position of staff engineer, commercial sales representative, engineer of utilization, and since 1933 until his present appointment, served as assistant manager of the Rosslyn Gas Company, a subsidiary of the Washington Gas Light Company.

More than 200 friends and associates recently attended a dinner given in honor of Mr. Carpenter's completion of 41 years' service with the company.

Jay C. Whitehair has been named Manager of Procurement and Traffic of Standard Brands, Inc., with headquarters at 595 Madison Avenue, New York, N. Y., according to an announcement by Joel S. Mitchell, president. He had been serving as manager of the Shefford Manufacturing Division in Chicago. Mr. Whitehair joined



Jay C. Whitehair

Standard Brands after five years of military duty in World War II, during which he rose to the rank of colonel in Headquarters Army Service Forces.

M. W. Gilchrist has been appointed Director of Purchases, Inventory and Stores of the Public Service Company of New Hampshire, Manchester, N. H. He succeeds H. G. Sargent, who recently retired.

NEWMAN EBERSOLE

Newman Ebersole, Director of Purchases of Armco Steel Corporation, Middletown, Ohio, died in Cincinnati on September 22. A graduate of Cornell University, Mr. Ebersole first became associated with Armco in 1911, as a weighmaster in the bar mill. Later, he was promoted to Assistant to Purchasing Agent and in 1937 was named General Purchasing Agent. He was advanced to the position of Director of Purchases in 1944.

Mr. Ebersole had a distinguished record in World War I, and following World War II was named by Lt. General Brehon

Somervell to a group of industrial leaders who made a study in Europe of the problems in the return of scrap metal from the battlefields.

AMONG THE COMPANIES YOU BUY FROM

Chicago, Ill.—Edward Hines Lumber Co. William J. Carney has been appointed sales manager of the engineered fabrication division. He will work with James



William J. Carney

Otis, manager of sales of prefabricated shelving; and E. V. Nottingham, sales engineer, in the sales of wood products, wood sub-assemblies, and heavy timber prefabrication for bridges, towers, etc.

Buffalo, N. Y.—Crocker-Wheeler Electric Manufacturing Company, Division of Joshua Hendy Corporation. A branch office has been reopened here in the Ellicott Square Building. The office is headed by Louis E. Rau.

Chicago, Ill.—The Billings & Spencer Company. W. T. Johnston has been appointed sales manager of the Chicago district.

New York, N. Y.—Federated Metals Division, American Smelting and Refining Company. A. M. Callis, former sales manager of the Chicago territory, has



A. M. Callis

been appointed to the newly created post of general sales manager. J. W. Kelin has been named to Mr. Callis' former post.

Pittsburgh, Pa.—Dravo Corporation. Transfer of the company's city offices from the Dravo Building at 300 Penn Avenue to the former Pitt Bank Building, Fifth and Liberty Avenues, has been completed.

(Please turn to page 300)

BALANCED

PHYSICALS

IT'S A GOOD TRICK

BUT

IT'S

EASY WITH

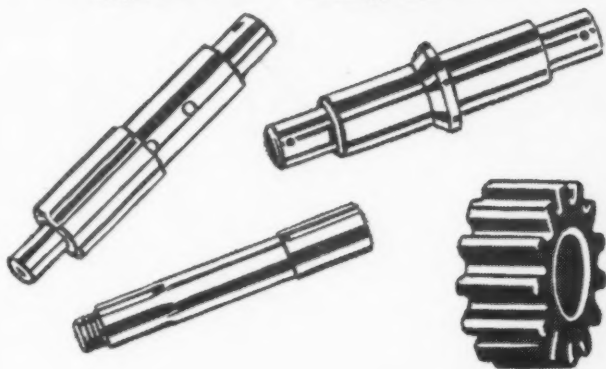


Strain-TEMPERED BAR STEELS

Bliss & Laughlin, Inc., specializes in engineering the "right steel to fit the job."

That means more than size, shape, grade, finish or analysis. It means a steel of definite chemical analysis, made to precision standards with the proper combination of balanced physical properties to give you optimum results in machining, fabricating, assembly and service.

You will find it profitable and advantageous to use B&L Cold Finished Strain Tempered Bar Steels tailored to meet your individual production requirements.



STRAIN-TEMPERING—

- Improves Bar Ductility
- Promotes Bar Uniformity
- Eliminates Heat Treating
- Checks Warpage Tendencies
- Reduces Production Costs
- Lengthens Service Life

COLD FINISHED **B** BAR STEELS AND SHAFTING
BLISS & LAUGHLIN, INC.

General offices: HARVEY, ILLINOIS

Plants: HARVEY, ILL. • BUFFALO, N. Y. • MANSFIELD, MASS.



(Continued from page 298)

San Francisco, Calif.—The Foxboro Company. The branch sales office and warehouse here has been enlarged and rearranged to give practically double the working space previously available.

Detroit, Mich.—Pratt & Whitney, Division Niles-Bement-Pond Company. Samuel J. Matchett has been named manager of



Samuel J. Matchett

the company's office here and will head machine tool sales in Michigan. He succeeds the late H. William Kopf.

Pittsburgh, Pa.—McConway & Torley Corporation. Joseph W. Farley has been appointed manager of sales, miscellaneous steel castings.

Cleveland, O.—Berger Manufacturing Division, Republic Steel Corp. Howard A. Baum has been named manager of office equipment sales.

Houston, Tex.—Baker Industrial Truck Division, The Baker-Raulang Company. W. B. Landers, 702 M & M Building has been appointed district sales representative in southeast Texas.

Rochester, N. Y.—American Brake Shoe Company. William H. Starbuck has been appointed assistant general sales manager of the Kellogg Division of the company.

Port Huron, Mich.—The Electric Auto-Lite Company. H. R. Butts has been named general sales manager of the wire division.

Tulsa, Okla.—Kieley & Mueller. Charles W. Snyder Company has been named mid-continent distributor for the company's automatic pressure and level controls.

Cleveland, O.—Claud S. Gordon Company. G. O. Romig has been appointed sales manager of the company's plant here.

Chicago, Ill.—Atlas Chain and Manufacturing Company. O. W. Schmidt has been appointed central states district sales manager.

New York, N. Y.—Hy-R-Speed, Inc. Holland W. Smith, Inc., Empire State Building, has been appointed exclusive sales agents in Maryland, Delaware, New Jersey, New York and Pennsylvania east of Harrisburg.

Chicago, Ill.—United States Gauge. Charles H. Kaufman has been appointed district manager in the company's office here.

Pittsburgh, Pa.—Calgon, Inc. Owen Rice has been elected vice-president in charge of commercial chemical sales for the company, a subsidiary of Hagan Corporation.

Boston, Mass.—Ohio Brass Company has moved its office here from 49 Federal Street to 620 Boston Chamber of Commerce Building at 80 Federal St. Lindsay Elms is district manager in charge of the office.

New York, N. Y.—Kennametal, Inc. John A. Storrs has been named sales representative in the New York district.

Perth Amboy, N. J.—The Carborundum Co. E. B. Forse, manager of the Refractories Division, has been appointed assistant vice-president. C. E. Hawke, formerly director of sales for the company, has become manager of the Refractories Division. E. R. Baxter has been named director of sales and sales administration of the company to succeed Mr. Hawke. G. R. Raynor has been named assistant director of sales administration.

East Alton, Ill.—Western Brass Mills, division of Olin Industries, Inc. Huntly M. Campbell has been appointed sales manager of the mill products division.

Greenfield, Mass.—Threadwell Tap & Die Company. Reg Anderson has been appointed sales engineer for New York state



Reg Anderson

and New England. Mr. Anderson has spent 16 years with Threadwell in production, inspection and sales work.

New York, N. Y.—Reynolds Metals Company. N. H. Kirchendorfer has been named eastern division sales manager of the parts division of the company. He has been with the company for 14 years, and from 1934 to 1942 he held several places in the purchasing department, rising to the position of southern General Purchasing Agent.

Portland, Ore.—Hyster Company. R. E. Stiegele, former district representative has been transferred to the general sales department here to handle special sales assignments for Philip Hill, general sales manager.

Salt Lake City, Utah.—Bemis Bro. Bag Co. Robert J. McDonald has succeeded L. P. Littell as manager of the company's office here. Mr. Littell has relinquished his direct selling responsibilities, but will remain in company service in an advisory capacity and will carry on other special duties in the territory.

Brooklyn, N. Y.—Detecto Scales, Inc. Mack Rapp, sales manager of the industrial division, has been appointed vice-president in charge of company advertising and publicity. He will continue in his present capacity as industrial sales manager.

Milwaukee, Wis.—Ampco Metal, Inc. S. C. Lawson, assistant general sales manager of the company, has been appointed general sales manager, succeeding R. J. Thompson who will be located in California, where he will serve as engineering and sales manager for the company's west coast activities.

Philadelphia, Pa.—Henry Disston & Sons, Inc. William P. Gillespie has been appointed manager of the company's new market requirements department. Chief function of the department is to interpret the requirements of customers on product design, utility, packaging and other features.

Tulsa, Okla.—Hammel-Dahl Co. Arduser and Company has been named dealer representative in this area.

Chicago, Ill.—E. C. Atkins and Company. Burleigh Owens has taken over the management of the company's branch here. He formerly covered southern Indiana-northern Kentucky-central Ohio territory.

St. Louis, Mo.—Hydro-Line Manufacturing Co. Rogers and Baxter, 2013 Olive St., have been appointed exclusive representatives for the company's air and hydraulic cylinders and special machinery, in the territory including southern Illinois, and all of Missouri, Iowa, Nebraska, Kansas and Oklahoma.

Cleveland, O.—Delapena & Son Ltd. The Motch & Merryweather Machinery Company, is now the exclusive selling representative for the English company's external honing equipment in the continental United States.

Chicago, Ill.—Signode Steel Strapping Co. A. J. Link has been named district sales manager. For the past seven years



A. J. Link

he has held the post of sales representative with headquarters in Indianapolis, Ind.

Cleveland, O.—American Brake Shoe Company. C. P. Corrigan has been appointed district sales manager for this area for the Ramapo Ajax Division of the company.

(Please turn to page 302)



Now the Marsh line will include

Witt OXYGEN and WELDING Gauges

On September 30, the Witt Gauge Division of National Pressure Cooker Company was acquired by Jas. P. Marsh Corporation. As a result, the broad line of Marsh instruments will be still further broadened to include oxygen and welding gauges.

The Witt oxygen and welding gauges will be manufactured in the main Marsh plant by the "Witt Gauge Division of Jas. P. Marsh Corporation."

To users of oxygen gauges this is a significant development. It means that the respected quality of the Witt line will be further heightened by Marsh experience and the unmatched facilities of the new Marsh plant.

WITT GAUGE DIVISION OF
JAS. P. MARSH CORPORATION
 DEPT. G, SKOKIE, ILLINOIS

**DELIVER THE GOODS safely
IN *American*
BOXES and CRATES**

WIREBOUND CRATE (above)
Strong, lightweight, has interior support fixtures. Easy handling, stacks well. Supplied flat for wrap-around assembly.

ALL-BOUND BOX (left)
Same strength and utility. Shaped to fit product. Wood veneer panels wirebound for protection against weather, dirt.

FIBREBOARD BOX (right)
Economical, efficient. Fully enclosed with fibreboard panels, steel stapled to wood cleats. Interior reinforcements. Supplied flat.

NAILED WOOD BOX (below)
Material, workmanship to meet or surpass Gov't Specifications for domestic or export.

**Engineered
for trouble-free
shipments
anywhere!**

You can *try* before you *buy*! Prove to yourself the many advantages of the American way to prepare your products for shipment . . . and no obligation. We'll fit your product into a specially made-up, sample packing, *engineered* for the utmost in protection at the lowest cost, and return it to you with our estimate. Send us your material and specifications today. Complete details promptly at your request.

THE *American* BOX COMPANY

Est. 1901 • 1901 W. 3rd Street • Phone: MAin 4221 • Cleveland 13, Ohio
Branch Plant: Marion, S. C.

Chicago, Ill.—Chicago Division, Electro Metallurgical Sales Corporation. G. A. Watson has been named manager of sales to succeed J. H. Spillane, who has been transferred to the general sales office in New York.

Bridgeport, Conn.—General Electric Company. W. Rex Becker has been appointed sales manager of standard lines for the company's conduit products division.

Los Angeles, Calif. — Blackmer Pump Company. William H. Maloney has been named manager of the branch sales office here.

Knoxville, Tenn.—Ampco Metal, Inc. Southern Oxygen Company, Inc. has been named as distributor outlet in this area.

INDUSTRIAL DEVELOPMENTS

Inland Steel Company, Chicago, Ill., has licensed M. W. Kellogg Company, New York, N. Y., to produce stainless Ledloy steel. M. W. Kellogg Company, a subsidiary of Pullman Company, has recently perfected a special process for the casting of stainless steels.

Hamilton-Thomas Corporation, Hamilton, O., has been formed to operate Economy Pumps, Inc., Klipfel Manufacturing Company, and Liberty Planers, Inc., manufacturing divisions of Hamilton-Thomas.

United States Plywood Corporation, New York, N. Y., has announced that operation at its newest plant, in Shasta, Calif., will probably reach a production rate of 60,000,000 feet per year by January 1.

Porter-Cable Machine Company has purchased the Unit Electric Tool Company. Both concerns have their headquarters in Syracuse, N. Y. Unit Electric Tool manufactures portable electric woodworking machines.*

Owens-Corning Fiberglass Corporation, Toledo, O., has established a Pacific Coast division, and construction of a new plant at Santa Clara, Calif., is now well under way. Production is expected to start there in July, 1949.

The Steel Improvement & Forge Company, Cleveland, O. has announced the completion of an expansion program that will double the capacity for production of forged gas turbine blades for the Air Force's jet engine program.

Shell Chemical Corporation has announced the completion of its plant at Houston, Tex., for the manufacture of synthetic ethanol and other products. Full scale production will begin soon. A new plant has also been erected in Houston to produce ethyl chloride. Delivery of the product in large-scale quantities was scheduled to begin this month.

(Please turn to page 304)

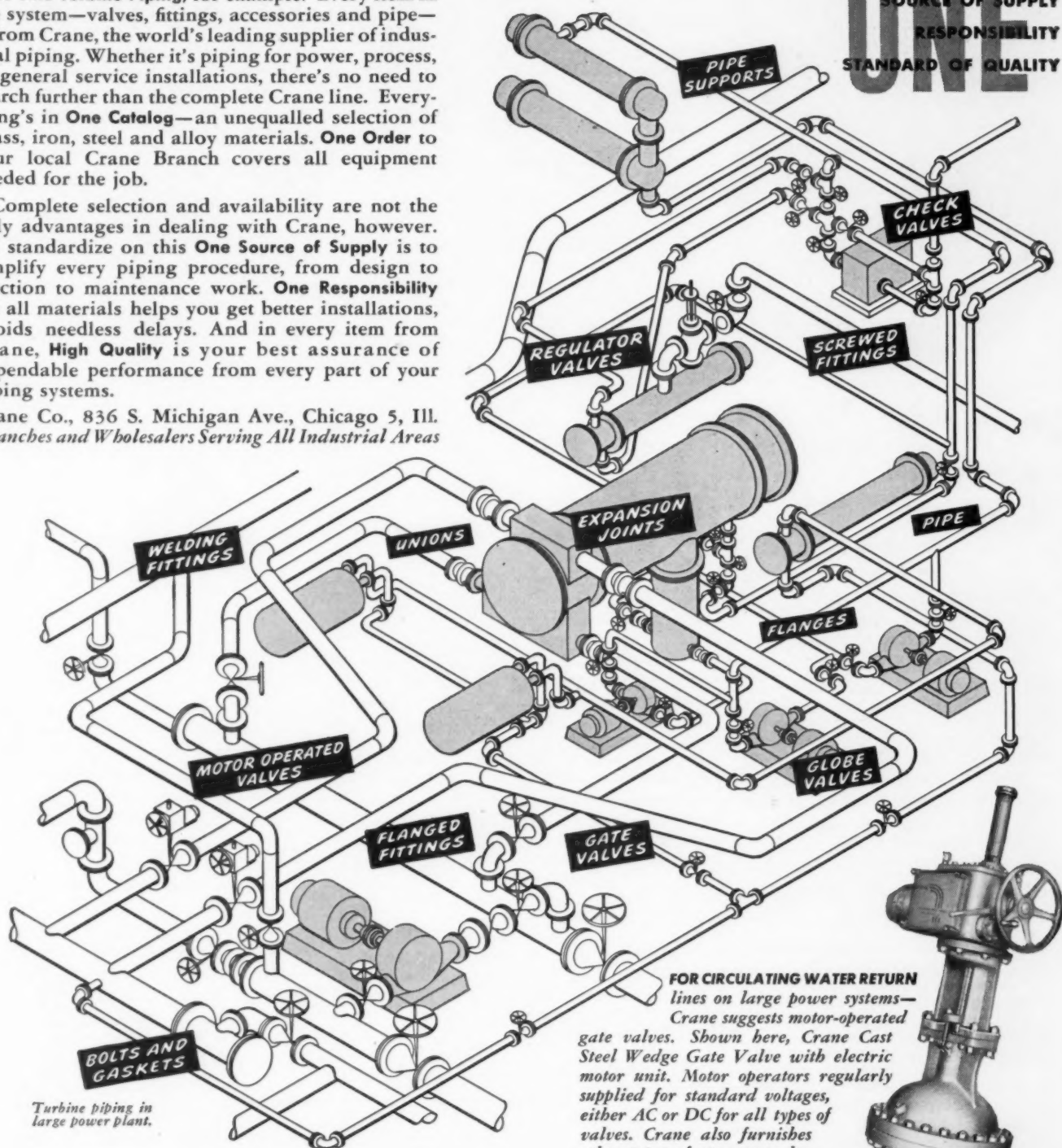
Everything in power piping ... on One Order to Crane

Take This Turbine Piping, for example. Every item in the system—valves, fittings, accessories and pipe—is from Crane, the world's leading supplier of industrial piping. Whether it's piping for power, process, or general service installations, there's no need to search further than the complete Crane line. Everything's in **One Catalog**—an unequalled selection of brass, iron, steel and alloy materials. **One Order** to your local Crane Branch covers all equipment needed for the job.

Complete selection and availability are not the only advantages in dealing with Crane, however. To standardize on this **One Source of Supply** is to simplify every piping procedure, from design to erection to maintenance work. **One Responsibility** for all materials helps you get better installations, avoids needless delays. And in every item from Crane, **High Quality** is your best assurance of dependable performance from every part of your piping systems.

Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

ONE
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY



Turbine piping in large power plant.

FOR CIRCULATING WATER RETURN lines on large power systems—Crane suggests motor-operated gate valves. Shown here, Crane Cast Steel Wedge Gate Valve with electric motor unit. Motor operators regularly supplied for standard voltages, either AC or DC for all types of valves. Crane also furnishes other types of operators—hydraulic, air, etc. See your Crane Catalog.

EVERYTHING FROM ...

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

**For AIR or GAS at
Constant Pressure!**



Allen-Billmyre
CENTRIFUGAL TYPE
**Blowers and
Exhausters**

- Inherently
Self-Governing
- Quiet and
Vibrationless
- Only One
Moving Part . . .

Power consumption varies with the load and a constant pressure is maintained through the entire capacity range.

Only two bearings—located well outside of the housing—require lubrication.

External bearings assure clean dry air at all times.

Ample clearances permit normal quantities of dust to pass through the machine without harmful effect.

The impeller assembly—the only moving part—is accurately balanced.

Allen-Billmyre Blowers and Exhausters are highly efficient for Agitation and Aeration . . . Manufacture of Gases, Acids . . . Combustion Processes . . . Conveying . . . Cooling and Ventilation . . . and all low Pressure and Vacuum Requirements
Made in wide range of sizes for ½ to 200 HP

FREE!

Send for Bulletin B-5. Describes Blowers and Exhausters . . . their application and specifications.

ALLEN-BILLMYRE DIVISION

LAMSON
CORPORATION
415 Lamson St. Syracuse, N. Y.

Westinghouse Electric Corporation is engaged in constructing a new transformer-tank shop at Sharon, Pa., with completion scheduled for next January. The new shop will substantially increase the corporation's output of large-size electrical transformers.

United States Rubber Company has announced that construction of a new building in Atlanta, Ga., which will house both offices and warehouses, is well under way and is expected to be completed and ready for occupancy this month.

The Resinous Products and Chemical Company and the Rohm & Haas Company, both of Philadelphia, Pa., have merged.

Firestone Rubber Company has announced a new division of Xylos Rubber Company to take over the activities formerly handled by Firestone Industrial Products. The Xylos division will provide sales service and technical assistance on natural rubber latices and compounds, GR-S latices and compounds, Butaprene latices and compounds, reclaim dispersion, and butyl rubber dispersions.

Fenn Manufacturing Company, Hartford, Conn. has acquired the main line of machinery manufacture of the Standard Machinery Company, Providence, R. I. For the time being operations will continue at the Standard plant in Providence, but during the next three months the acquired lines will be moved to Fenn's Hartford and New Britain plants.

The Solvay Process Division of Allied Chemical & Dye Corporation has started construction on a new \$1,000,000 research laboratory in Syracuse, N. Y.

General Electric Company's Electronics Department, Syracuse, N. Y., has announced the formation of a new division, called the Industrial and Transmitting Tube Division, within the company's tube divisions. It will consolidate all sales, design engineering and manufacturing activities related to the former Power Electronics Division.

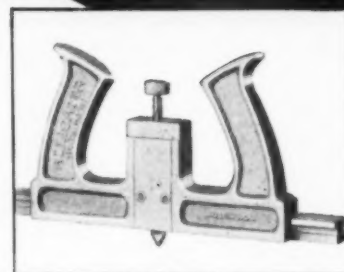
Kennametal, Inc. has begun another expansion program, involving an expenditure of \$200,000 at Latrobe, Pa. The new plant building, having 6,000 sq. ft., is for the carbide division.

Economy Engineering Company, makers of portable elevators and other materials handling equipment, has moved all manufacturing facilities to a new plant at 4511 West Lake Street, Chicago 24, Ill. The new plant about doubles the former shop floor space.

Consolidated Western Steel Corporation (a California corporation) has sold its business and operating properties, including the plants formerly operated by Western Pipe & Steel Company of California and The Steel Tank & Pipe Company of California, to a subsidiary (a Delaware Corporation) of the United States Steel Corporation, which will also be known as "Consolidated Western Steel Corporation".

**MAKES
CUTTING OF
WIDE BELTS**

Easy



Here is a tool that makes the cutting of wide conveyor and transmission belting a simple and easy job—it's the Alligator Wide Belt Cutter for cutting all flat belts (except those containing metal) up to 1½" thick. The base is made in four lengths—24", 36", 48" and 60".

The base can be held in position by the hand or nailed down as shown. The pointed alloy steel blade is adjustable in the aluminum head which slides on the T-shaped guide rail of the base. With several rapid strokes the belt is cleanly and squarely cut.

Bulletin No. BC-350 gives all the details on this new cutter.

Order from your Supply House

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street,
Chicago 44, Illinois

Also sole manufacturers of Alligator Steel Belt Lacing for transmission and conveyor belts, Alligator V-Belt Fasteners and Flex V Fasteners, for V-Belts, Flexco HD Fasteners and Rip Plates and Hinged Flexco Fasteners for conveyor belts.

Wise Choice

for maximum fastener strength—

CLEVELAND *Top Quality*

**High Carbon
Heat Treated
Cap Screws**

made by

**DOUBLE
EXTRUSION**

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(The Kaufman Process)

It's easy to select Cap Screws when you know that one type, which costs very little more than the general run, has all the desirable qualities recommended by metallurgists and engineers.

Cleveland High Carbon Heat Treated Cap Screws made by the Kaufman Process—the Double Extrusion method—"come through" with all ten important points that experts look for in correctly made fasteners. These qualities, and the extra toughness and dependability of Clevelands give you full assurance of a wise choice.... The same manufacturing method produces Top Quality socket head cap screws—the newest addition to the Cleveland Cap Screw Line.

*Write for folder explaining double extrusion.

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Top Quality
FASTENERS

The Cleveland Cap Screw Company

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Warehouses: Chicago and Philadelphia
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22 lbs. machine parts goes 700 miles for \$4.73.
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Same day delivery in all these cases if you ship early.



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE
SCHEDULED AIRLINES OF THE U.S.

TEXTOLITE FAN NOW STANDARD EQUIPMENT ON G-E ENCLOSED MOTORS

G-E Tri-Clad totally enclosed, fan-cooled motors are now available in popular sizes from one to 20 hp equipped with a newly developed, corrosion-resistant Textolite cooling fan. The incorporation of this new fan in these standard, highly corrosion-resistant cast iron motors now makes them specially desirable for use in corrosive atmospheres. In addition, since the fan is non-sparking, it has also been incorporated in G-E totally enclosed motors designed for use in hazardous gas or dust locations. With the new fan now standard equipment on all these varieties, the use of standard, off-the-shelf motors for the majority of applications is now possible.

The fan is the result of exhaustive research, involving various materials and exacting tests. It has all the desirable features of metal fans, yet it is relatively inert to most corrosive atmospheres encountered in the chemical and allied industries. In addition, it has adequate strength to withstand rotational and assembly stresses. A feature of its design is the compression web at the inner face of the hub. This web not only supports some of the compression force, but also serves as a barrier to prevent liquids from passing directly through the fan and coming in contact with the bearing seal.

RAMIE PUMP PACKING ANNOUNCED BY U. S. RUBBER

Ramie, one of the world's oldest vegetable fibers and one that has tantalized textile engineers for more than a century in their efforts to find a practical end use for the material, is now being produced as packing for reciprocating pumps by United States Rubber Company.

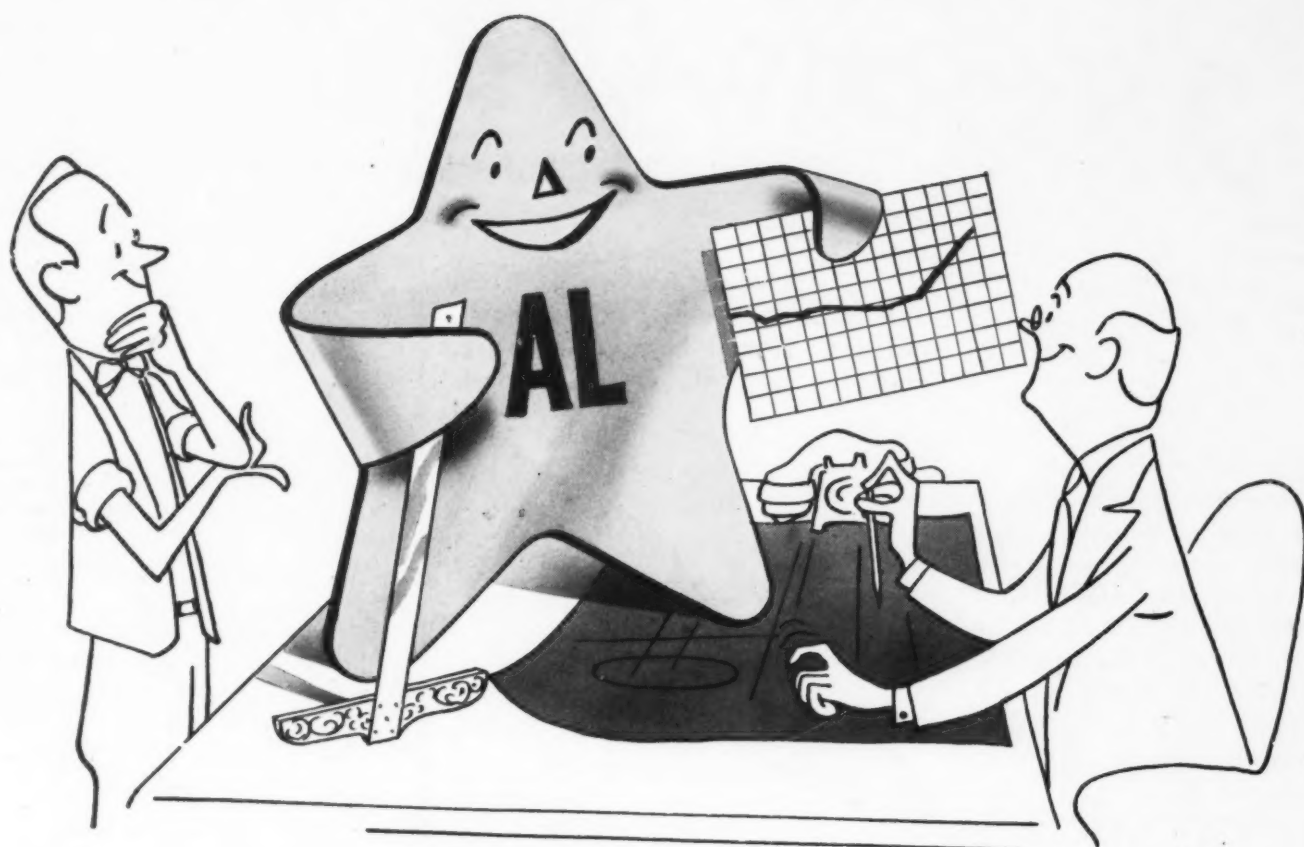
Ramie packing is recommended for such uses as cold water and brine pumps because its high tensile strength and ability to absorb and retain lubricants, minimize abrasion and prolong wear. Its toughness makes it suitable for packing applications where service requirements are too severe for flax or jute fibers.

Company engineers have found that Ramie is highly resistant to fresh or salt water, brine or cold oil. Its tensile strength, they point out, is unaffected by moisture and, in fact, increases slightly when wet.

The fiber is produced from a grass native to the Orient and now being grown in increasingly large quantities in Florida. Orientals used Ramie for clothing and decorative fabrics. Since its introduction into Europe in 1845, scientific efforts to find a sound, practical end use for the fiber in the textile industry have met with only modest commercial success. Its tough, long wearing qualities, however, have brought it rapidly increasing popularity and acceptance among engineers as a packing material.

U. S. Rubber is marketing Ramie packing square plaited in coil form and in sizes of one-quarter inch thickness and larger.

(Please turn to page 308)



● Want a competitive edge?

Design for permanence and sell permanence
with Allegheny Metal, the pioneer stainless steel.

It's cheapest in the long run

because it lasts a lifetime . . .

it fabricates easily, and best of all,

you can get Allegheny Metal promptly.

Complete technical and fabricating data—engineering help, too—yours for the asking.

ALLEGHENY LUDLUM STEEL CORPORATION

The Nation's Leading Producer of Stainless Steel in All Forms



Pittsburgh, Penna. . . . Offices in Principal Cities

Allegheny Metal is stocked by all Jos. T. Ryerson & Son, Inc., Warehouses

3 HANDEES COVER the FIELD

TOOLS OF 1001 USES GRIND, DRILL, POLISH,
ENGRAVE, CUT, CLEAN, SAW, CARVE, etc.

For work on metals, alloys, wood, plastics, stone, horn, bone, etc. Plugs in any AC or DC socket.

HANDEE 44

A good production tool. Has everything — speed, power, versatility and pencil-point precision. Constantly cooled by forced air, the 44 runs cool and smooth all day long. Weighs 2 lbs., 8½" long, 20,000 r.p.m. \$31.50. In wood carrying case with accessories \$42.50.

HANDEE Hi-Power

A big fellow. Fast, powerful, sturdy, for continuous work. Has ample power to drive a 2½" diameter wheel. Weighs 3 lbs., 10" long, 17,000 r.p.m. In case with assortment of accessories \$42.50.

HANDEE

First tool of this type and today's finest. For precision work. Also gets into hard-to-reach places to make repairs on machinery. Weighs 12 oz. 6½" long. 25,000 r.p.m. With 7 accessories \$20.50. Handee with 40 accessories in carrying case \$27.50.

CHICAGO ACCESSORIES

Grinding and mounted wheels, sanders, steel cutters, etc.—the most complete line to fit any power tool—over 500 of finest quality—all made in our own plant.

Handee Tools and Accessories are in stock in principal industrial areas. Write for Catalog.

☐ Send Handee 44 Name

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CHICAGO WHEEL & MFG. CO., 1101 W. Monroe St., Dept. PG, Chicago 7, Ill.

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☐ Send Catalog

CHECK LIST FOR THE SMALL OR OCCASIONAL SOLVENT USER

Accident records suggest that trouble with solvents arises more frequently where these chemicals are used only occasionally or in comparatively small quantities than where large quantities of solvent are regularly employed. The reason seems to be unfamiliarity on the part of the small user with the need for precautions or with the measures which should be taken.

Because even a single instance of careless or improper handling of a solvent during operations such as cleaning, degreasing or thinning may under certain circumstances result in a fire or sickness, or both, depending upon the solvent used, the following points should be checked:

1. What does the label say?

Many solvent containers are labeled with recommendations for safe use. If the label has no such information, the manufacturer or packager may be of assistance in providing safe handling data. When smaller cans or bottles are filled in the shop from larger containers, the smaller containers should also be clearly labeled.

2. Are solvent containers always kept closed?

Self-closing safety cans are useful when containers must be opened frequently. Open pans are unsafe for storing or carrying solvents.

3. Is there plenty of ventilation whenever a solvent is used?

Any solvent operation, unless it is carried out in entirely enclosed equipment, may give off dangerous quantities of vapor. Depending upon the operation, open windows, mechanical ventilation or gas masks may be the best way to protect workers from inhaling the vapor. Where a solvent is used frequently, even in small quantities, mechanical ventilation is probably essential. Industrial hygiene services of local and state health or labor departments are glad to advise on ventilation.

4. Is there a noticeable odor of solvent in the workroom?

The absence of solvent odor does not always indicate that the air is safe. However, a noticeable odor generally means that there is too much vapor in the air, even for fairly short operations.

5. Are workers' hands being soaked in solvent?

Whenever solvent may wet the skin frequently or for considerable periods of time, protective gloves of a solvent resistant material should be worn to prevent dermatitis.

6. Are workers trained to be good "housekeepers"?

Solvents should be handled to avoid spilling, and solvent-soaked waste and rags should be disposed of in airtight containers.

7. Are solvent operations well supervised?

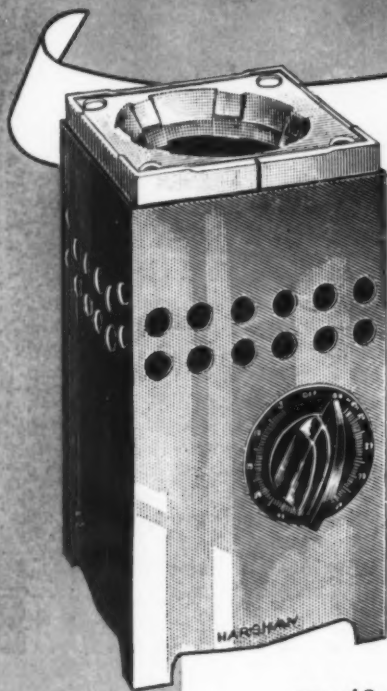
The plant manager or owner must often be his own safety director, to make certain that workers handle the solvent according to instructions and use gloves, gas masks or other safety equipment provided.

8. Are the men who work with solvents in good health?

(Please turn to page 310)

"PRECISION" PERCENTROL HEATER

DOUBLES AS CONTROLLER



Versatile . . .

HARSHAW

Will do the work which normally requires two pieces of equipment. By "flipping" a switch, the percentrol heater can be used independently as a controller for other hot plates, heaters, water baths, etc.

FLEXIBLE—By turning the adjustment knob to a reference setting on the dial, the range of the controller can be changed from 5 to 60 seconds.

ACCURATE—Heater is capable of duplicating specific heat temperatures. It employs porcelain refractories, nickel chromel heating elements and monel terminals, all enclosed in a stainless steel case. Refractories and heating elements are interchangeable.

CONSTRUCTION—The stainless steel radiation shield below the heater is far superior to ordinary transite shields commonly used.

TESTED PERFORMANCE—It is proven that dial settings will hold temperatures throughout the range from 125° F. and higher within $\pm 1^\circ$ F.

DATA FOR ORDERING

H-28015A Percentrol Heater, 750 watts,
115 volts, 50-60 cycles . . . each **\$37⁵⁰**

H-28015B Percentrol Heater,
750 watts, 230 volts, 50-60
cycles each **\$37⁵⁰**

*Prices subject to change
without notice.*

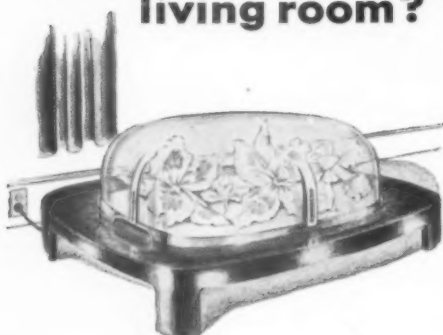
HARSHAW SCIENTIFIC

DIVISION OF THE HARSHAW CHEMICAL CO.
CLEVELAND 6, OHIO

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HUMIDI-HEATER

**for Tropical
Plants in your
living room?**



SOMEWHERE, in the future, there is a plastic dish and dome with heating element and water to produce the controlled heat and humidity necessary for growing tropical plants at home. When, and if, it is marketed, Auburn engineers can decide what parts should be plastic molded . . . and the right plastic for the job.

Since 1876, Auburn has pioneered and grown with the plastics industry. Today the Auburn mold-mark has come to mean quality, delivered on time, at reasonable cost. Auburn Button Works, Inc., 300 McMaster St., Auburn, N. Y.

COMPRESSION, TRANSFER AND INJECTION
MOLDING • AUTOMATIC ROTARY MOLDING
FOR MASS PRODUCTION • EXTRUDED VINYL
OR ACETATE TUBES AND SHAPES • MOLD
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Offices: New York and Chicago, Representatives: New England, Philadelphia, Cleveland, Detroit, San Francisco

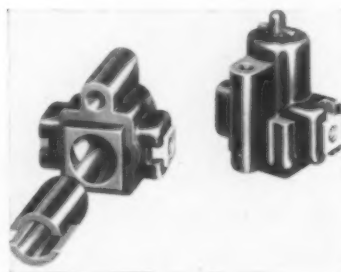
(Continued from page 308)

Those who work with solvents should report stomach upset, dizziness or other illness to a physician, since these may be symptoms of exposure to solvent vapors. Alcoholics and those suffering from certain organic illnesses should not work with solvents. In many companies, pre-placement examinations are given to employees before they are assigned to solvent operations.—Safety Research Institute.

♦ ♦ ♦

PLASTICS PART CUTS TOOL AND LABOR COSTS

Illustration shows plastic switch housing for automobile carburetor which employs unusual electric switch, molded by Plastic Research Products Co., Urbana, Ohio, which is molded eight to a cluster, cutting down tool and labor costs. It is a complicated part in which a piston operates to make and break the circuit, and



metal contacts on the inside of the housing had to be free of molding flash, with the brass surface of each contact exactly flush with the plastic inner cylinder wall of the housing. The mold produces the piston and housing at the same time. The parts were made for the Eclipse Machine Division of Bendix, at Elmira, N. Y., which handles assembly of the carburetor.

♦ ♦ ♦

ORTHODICHLOROBENZENE NOW IN FIVE GALLON LOTS

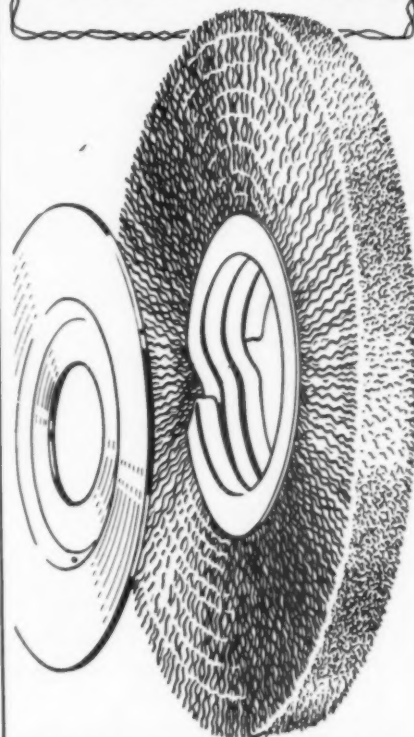
Availability of Orthodichlorobenzene technical in quantities as small as five gallons was announced recently by Monsanto Chemical Company. This chemical has long been a car lot item in the industry.

The move was made to accommodate the increased number of small volume consumers of this versatile solvent, according to H. C. Koehler, manager of the company's special products sales department. Unusual characteristic of Orthodichlorobenzene, he said, is its combination of high solvent power and low toxicity with low flammability.

In informal tests, rags soaked in the chemical would barely support combustion while flame was held to them, and snuffed out when it was removed. Blends of gasoline or kerosene and Orthodichlorobenzene are less-hazardous cleaning agents in machine shops, die works, garages and tool rooms. It is also reported to be an excellent paint brush cleaner and "spotting" agent.

(Please turn to page 312)

New type WHEEL BRUSH



FULLERDISC

Easy to Install

Costs less to Replace

With Fullerdisc you replace *only* the brush section. You buy side plates just once. Adapters are built into the sideplates, thereby eliminating that expense also. Combination side plate adapters fit all shafts from 1/2" to 1".

Available in diameters from 5" to 9" in a choice of materials. For complete specifications send for new folder "Fullerdisc Wheel Brushes".

Write to . . .

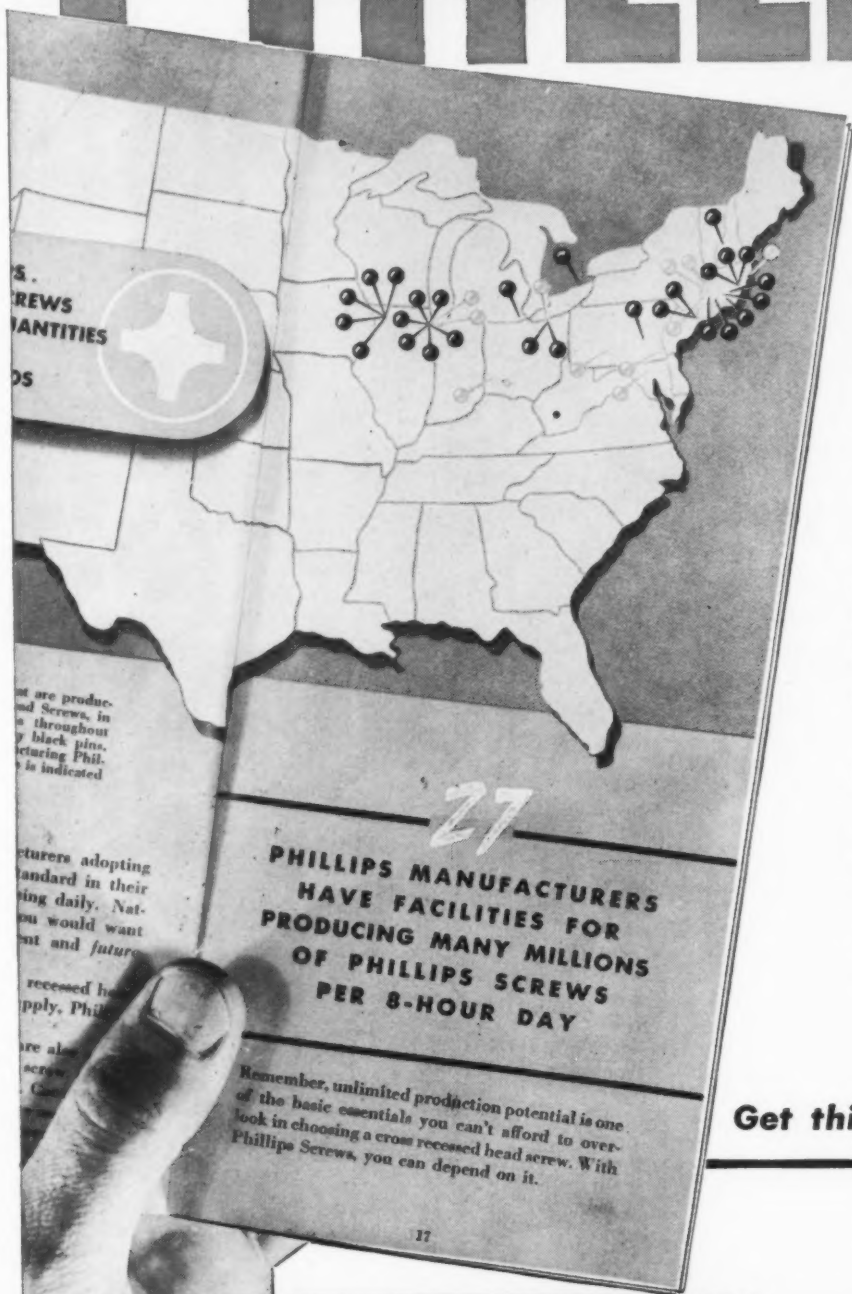
THE FULLER BRUSH CO.

INDUSTRIAL DIVISION

3554 MAIN ST., HARTFORD 2, CONN.

ONLY PHILLIPS

RECESSED HEAD SCREWS



are available
from **MULTIPLE**
sources of supply

With the cross recessed head screw rapidly becoming the preferred screw for all types of industrial assemblies, it is all-important to be sure that present and future needs can be supplied.

Since Phillips is the only cross recessed head screw with *multiple* sources of supply, Phillips Screws are your logical choice. And this is just one of the five important reasons why *only* Phillips Screws give you *all* the advantages of the cross recess design.

Get this new Fact-Full Booklet

that lets you in on the important facts you can't afford to overlook when you choose cross recessed head screws. It's FREE. Use the coupon.

GET ALL THE ADVANTAGES OF ASSEMBLY
WITH CROSS RECESSED HEAD SCREWS...

PHILLIPS Recessed Head SCREWS

Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

27 SOURCES

American Screw Co.
Camcar Products Co.
Central Screw Co.
Continental Screw Co.
Corbin Screw Div. of
American Hdwe. Corp.
Elco Tool & Screw Corp.
The H. M. Harper Co.
Lamson & Sessions Co.
Milford Rivet and Machine Co.
National Lock Co.

National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation
Pawtucket Screw Co.
Pheoli Manufacturing Co.
Reading Screw Co.
Rockford Screw Products Co.
Russell Burdall & Ward
Bolt & Nut Co.
Seavill Manufacturing Co.
Seaboard Screw Corp.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wales-Beech Corp.
Wolverine Bolt Company



Phillips Screw Mfrs.,
c/o Horton-Noyes Co.
1800 Industrial Trust Bldg.
Providence, R. I.

Send me the new booklet—"How to Select Recessed Head Screws for Practical Production Driving".

Name _____

Company _____

Address _____

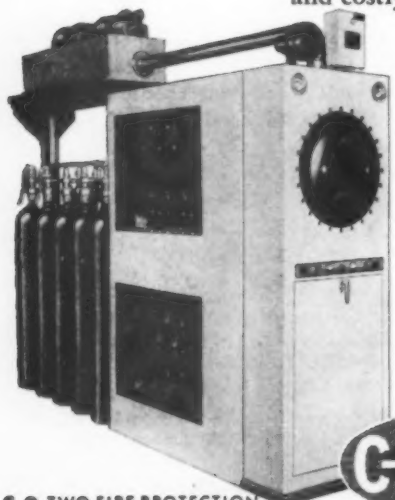
P-35

C-O-Two helped a leading department store solve a fire protection problem



Fire, even a small one, can spread rapidly . . . create panic . . . loss of good will, equipment, buildings and human lives.

Twenty of the electric stairways at Marshall Field & Company in Chicago are now protected from fire by C-O-TWO. Little chance of cigarette butts, matches, overheated motors, or short circuited electrical equipment starting a disastrous fire. The C-O-TWO Combination Smoke Detecting and Fire Extinguishing System automatically detects smoke in the machinery room and the housing of these electric stairways. Upon a signal, non-damaging carbon dioxide is released into the threatened area, controlling the fire before panic and costly damage takes place.



C-O-TWO FIRE PROTECTION EQUIPMENT INSTALLED AT THE MAIN FIRE STATION
left to right — carbon dioxide cylinders, blowers, control valve cabinet and smoke detecting cabinet.

Whether your fire protection problem is a store, factory, ship or power plant, an expert C-O-TWO Fire Protection Engineer can help you plan and install adequate fire protection equipment.

Write us today for your free copy of the test report on this installation.

C-O-TWO

C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

EXTRA DURABILITY AND HEAT RESISTANCE FEATURE NEW ABRASIVE BELTS

New abrasive belts designed with a resin bond to provide extra durability and heat resistance, have been announced by the Minnesota Mining & Manufacturing Co., St. Paul, Minn. Called "Three-M-ite" Resin Bond Cloth Belts, the new abrasive tool will be available in widths up to 18" and in lengths from 60" up. It consists of aluminum oxide mineral grains, in grits from 24 to 120, coated on flexible cloth backing with a resin bond. J. C. Duke, vice president in charge of the 3M company's abrasives division says that "all tests of the belts to date indicate increased productivity in rate of cut and in life of belt."

1 1 1

SHELL DEDICATES PLANT FOR MAKING SYNTHETIC GLYCERINE

The world's first plant for making synthetic glycerine in commercial quantities was dedicated in Houston, Tex., recently, by the Shell Chemical Corporation. The plant is designed to produce high-quality glycerine from petroleum by process originated by the Shell Development Company.



Aluminum tank cars are to be used for transporting the synthetic glycerine

The largest single consumer of glycerine is the paint and varnish industry which takes about 40,000,000 pounds a year, followed by the cellophane, explosives, and tobacco industries. Also helping to account for the nation's total use of about 200,000,000 pounds of glycerine every year are manufacturers of soap, cosmetics, tooth paste, shaving cream, foods, hair tonic, paper and glue.

1 1 1

"SUCCESSFUL BOTTLE LABELING" BY NATIONAL ADHESIVES

Revision of its book "Successful Bottle Labeling" is announced by National Adhesives, 270 Madison Avenue, New York 16, N. Y. Compiled with the assistance of leading manufacturers of labeling equipment, glass containers, and labels, the booklet contains helpful information on the selection of the proper type of adhesive for applying all types of labels to glass surfaces.

(Please turn to page 314)



TO MARK PROGRESS

SEAMLESS WELDING FITTINGS
1/2"-30" STD. thru XXH

90° Elbows
45° Elbows
180° Return Bends
Full Branch Tees
Reducing Outlet Tees
Concentric Reducers
Eccentric Reducers
Lap Joint Stub Ends
Saddles & Caps

SEAMLESS REDUCING ELBOWS
2"x1"—6"x5" STD. & XH

FORGED STEEL FLANGES
1/2"-30" 150# thru 2500#

Welding Neck
Slip-on
Lap Joint
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Blind
Socket-Welding
Reducing
Orifice Unions

LONG WELDING NECKS

FORGED STEEL FITTINGS
Screwed & Socket Weld
1/2"-4" 2000# thru 6000#

90° Elbows
45° Elbows
Tees
Crosses
Street Elbows
Laterals
Couplings
Reducers
Bushings
Plugs
Caps

AVAILABLE IN CARBON, ALLOY
AND STAINLESS STEELS

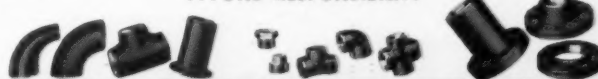
Complete Selection

OF YOUR FITTINGS NEEDS FROM THE
LADISH *Controlled Quality* **LINE**



You can secure your entire requirements from one source by standardizing on the complete Ladish line of Seamless Welding Fittings—Forged Steel Flanges—Forged Steel Screwed and Socket Welding Fittings. Complete range of sizes . . . Carbon, Alloy and Stainless steels . . . forged to the uncompromising standards of Ladish Controlled Quality.

A COMPLETE LINE PRODUCED UNDER ONE ROOF
... ONE RESPONSIBILITY



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MILWAUKEE SUBURB

DISTRICT OFFICES: New York • Buffalo • Pittsburgh • Philadelphia
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**Buy
with
confidence**



from the Janitor Supply House DISPLAYING THIS EMBLEM!

Not only is The NATIONAL SANITARY SUPPLY ASSOCIATION Member able to supply everything you may need in sanitary supplies, cleaning equipment, sanitary chemicals, etc., but his knowledge, acquired through years of *specialized* Sanitation and Maintenance experience, is at your command and may prove helpful to you in speeding up your cleaning and sanitation program; may help you *save time and money*. We are sure you will find it both PLEASANT AND PROFITABLE to consult a NATIONAL SANITARY SUPPLY ASSOCIATION MEMBER about any of your cleaning, maintenance and sanitation problems.

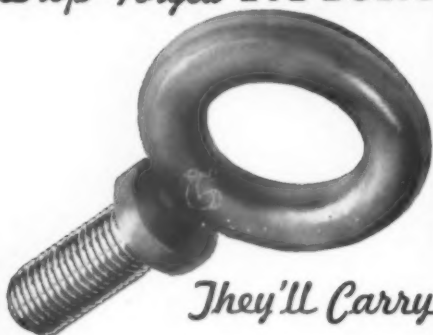
NATIONAL SANITARY SUPPLY ASSOCIATION

(INCORPORATED NOT-FOR-PROFIT)

National Headquarters 139 North Clark Street, Chicago 2, Ill.

Leo J. Kelly, Executive Vice-President

ARMSTRONG Drop Forged EYE BOLTS



*They'll Carry
the Load*

Specify ARMSTRONG Drop Forged Eye Bolts for extra strength — correctly engineered proportions, forged-in quality, uniformity of design in all sizes and the best mild steel, heat treated to increase tensile strength. Built to tool standards, not hammered out as "tonnage" forgings, "they always carry their load safely."

Stocked by Armstrong distributors with or without shoulders, threaded or as blanks in 16 sizes (openings from 3/4" to 4" i.d.)



ARMSTRONG BROS. TOOL CO.

5203 W. Armstrong Ave.

Chicago 30, U. S. A.

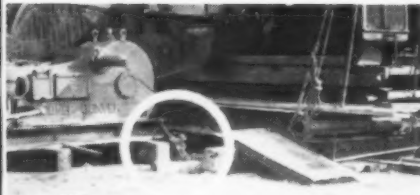
New York

San Francisco

Speed Maintenance Jobs

WITH A SIMPLEX

EMERGENCY JACK MODEL 310-A



Lifts vertically, lifts or pushes at any angle!

Lifts full 15 ton capacity on the machine serrated toe, on the cap, on the auxiliary cap shoe or on any link of 5' chain!

Double lever socket!
14" lift!



Use the Jack that Ford specifies to meet emergency jacking needs — it is powerful, versatile, safe and efficient.

SEND FOR BULLETIN: INDUSTRIAL 48

Simplex
LEVER - SCREW - HYDRAULIC
Jacks

TEMPLETON, KENLY & CO.
1014 S. Central Ave., Chicago 44, Illinois

(Continued from page 312)

Chapters are devoted to such subjects as Methods of Labeling, Selections of Labels, Container Design, Handling of Adhesives, Regulation and Care of Machines, and other similar subjects of interest to bottlers. It presents a number of charts covering various common labeling difficulties together with description of their causes and methods for correction. Copies are available for the asking.

1 1 1

GOODRICH ANNOUNCES KOROSEAL BRATTICE CLOTH

Used in mines as a temporary or permanent barrier to direct ventilation to or away from areas where it is or is not required, The B. F. Goodrich Company announces that it is now manufacturing Koroseal brattice cloth. The cloth is an all-plastic material compounded much the same as the Koroseal trolley guard recently introduced and widely accepted in the mining field.

The company claims that Koroseal brattice cloth is a more efficient material, more convenient to use and will outwear the conventional treated jute or burlap cloth used in this service.



Among major advantages of the Koroseal brattice cloth cited by the manufacturer are:

Will not burn except when flame is directly and constantly applied and stops burning when flame is removed; mildew and mine damp little or no effect on it; resistant to action of acid mine water and atmospheric gases; does not absorb moisture and thus become heavy and clammy; excellent tear strength and abrasion resistance; completely impervious to air.

Koroseal brattice cloth is made in .015 inch thickness in 36, 42, 48 and 54 inch widths with folded edges as reinforcements.

1 1 1

ALUMINUM APPROVED FOR DUCT INSTALLATIONS

The National Board of Fire Underwriters has approved aluminum for use in the installation of ducts for air conditioning, warm air heating, air cooling, and ventilating systems, according to the Reynolds Metals Co., 2500 So. Third Ave., Louisville, Ky. The 1948 issue of NBFU Pamphlet No. 90 soon to be issued, will contain revision to include standards for ducts constructed of aluminum. The standards

(Please turn to page 316)



...as pretty as a picture

THE SET-UP BOX is first choice among designers of fine packages. It offers unlimited selection of papers, colors, screens, and graphic methods - - - all tools of the trade to frame your product in its prettiest picture - - - and protect it - - - *and sell it.*

See your nearest set-up box manufacturer. His designers will help you improve your product package.

Screens — Ben Day, Chemtone Process 65-300, etc.

Papers — Smooth, Dull, Glossy, Colors, Textured, etc.

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FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

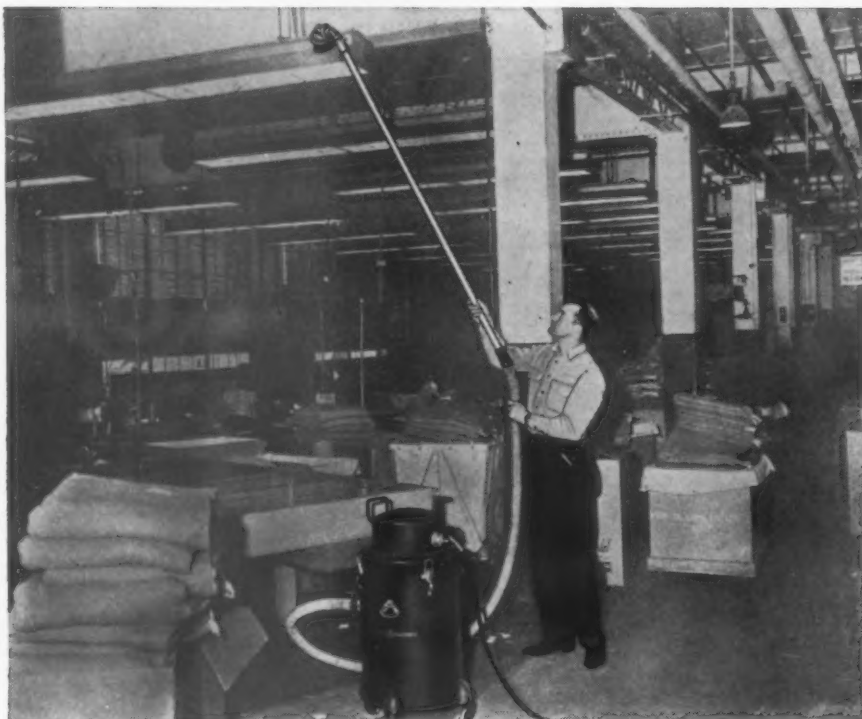
NATIONAL PAPER BOX MANUFACTURERS



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AND COOPERATING SUPPLIERS

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Will YOUR Cleaning Equipment do this?



High vacuum overhead beams, lighting fixtures and conduit?

WRITE for descriptive literature on heavy-duty vacuum cleaners, as developed by **GENERAL ELECTRIC** engineers. The information costs you nothing; may lead to savings that will surprise you.

NINE OUT OF TEN plants, General Electric engineers believe, are losing money needlessly through failure to adopt modern methods for such jobs as these:

- removal of hazardous dirt and dust from machines and hard-to-reach areas
- pick-up of heavy dirt and metal scrap
- periodic cleaning of factory and office floors
- wet as well as dry pick-ups
- more frequent cleaning of boiler tubes, etc., to reduce fuel costs and improve operating efficiency.

With characteristic General Electric thoroughness, the engineers have analyzed the problems of plant cleaning and have come up with new answers to this age-old cause of headaches. The saving, speed, and thoroughness of the new G-E

equipment will delight you; the enormously multiplied capacity it puts into the operator's hands is a revelation. You simply can't afford not to know all about it. Send coupon for specifications of "the right equipment which will do it better than ever."

and this?



Scoop up bolts, shavings, gravel, etc.?

SEND TODAY! GENERAL ELECTRIC



Learn all about G-E heavy-duty cleaners.

INDUSTRIAL CLEANERS, Dept. 22-31
GENERAL ELECTRIC CO. Bridgeport 2, Conn.

Our most serious cleaning problem is _____

Without obligation, please send the specifications of your new equipment.

Name _____

Firm _____

Address _____

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(Continued from page 314)

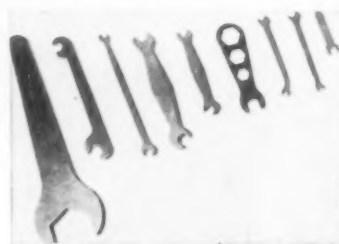
will cover installation for residences as well as for industrial building. Copies of the standards may be obtained from the National Board of Fire Underwriters, 85 John St., New York 7, N. Y.; 222 West Adams St., Chicago, Ill.; or, Merchants Exchange Building, San Francisco 4, Calif. The new changes include a section which points out that aluminum, cadmium plated or zinc-coated hardware and fittings should be used in the fabrication and erection of aluminum duct work.

1 1 1

DIE-CUT CUSTOM MADE WRENCHES IN SMALL LOTS

Special custom made wrenches in small quantities can now be obtained from the Dayton Rogers Manufacturing Co., Minneapolis 7, Minnesota.

This service is particularly adaptable to the manufacture of special equipment and apparatus where one or more special wrenches are required to be shipped with each piece of apparatus. It is now possible to obtain a limited number of custom made special stamped wrenches in small lots to fit special apparatus.



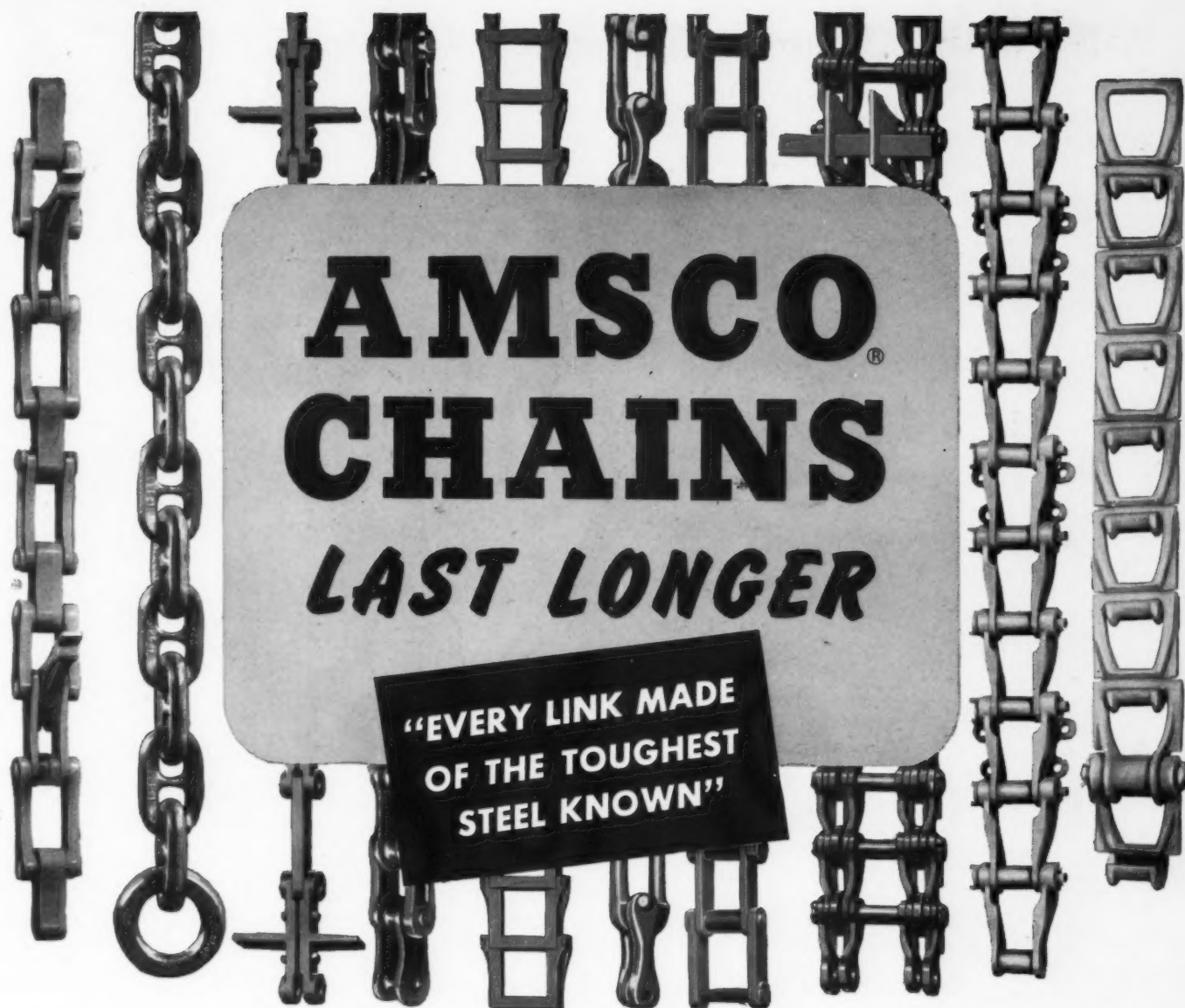
Samples of various sized wrenches.

This wrench service makes it possible to procure wrenches from the smallest size up to a maximum length of 20" in gauge thickness of 1/32" to 1/4" thick. These custom made wrenches can be produced from any sheet stock, heat treated and finished to the customer's requirements costing about 15% or 20% of the regular forged construction.

1 1 1

BALL-BEARING-GREASE TESTING EQUIPMENT

New equipment for testing ball-bearing grease under conditions similar to those of field use, is announced by General Electric's Special Products Division, Schenectady, N. Y. The tester accelerates the conditions which contribute to the destruction of a grease, thereby enabling comparison of performance of one grease with another. The equipment consists of two components: the ball-bearing-grease tester and the control box. The tester is a small motor-driven unit with two bearings—one for testing and the other as a guide. A 500-watt heater, located between these bearings simulates the source and flow-paths of heat in an electric motor. The temperatures of the outer race of the bearings are measured by a pair of copper conic thermocouples. Complete information about the equipment is given in Bulletin GEC-316.



Replacing ordinary elevating and conveying chain is a constant drain on profits . . . a constant source of production tie-ups and delays. Stop all these worries today by installing Amsco manganese steel chain in the really tough services. It often repays its own cost many times over by its tough resistance to breakage stresses and its outstanding wear resistance.

Here's the kind of service users report: 25 months with little wear versus 8 months; 27 months with 2 years' service left where ordinary chain lasted only 3 months.

With a test-bar tensile strength of 125,000 lbs. (average test), high ductility, and a surface that work hardens to as high as 550 Brinell, Amsco manganese steel chain withstands severest stresses and grinding abrasion . . . it can be used without lubrication in dust-laden atmospheres.

Added to this is the Amsco engineering design experience that will help to meet your problem with the one best chain for trouble-free service. Write for Bulletin 742-CN . . . and let us quote on your requirements.

AMERICAN

Brake Shoe

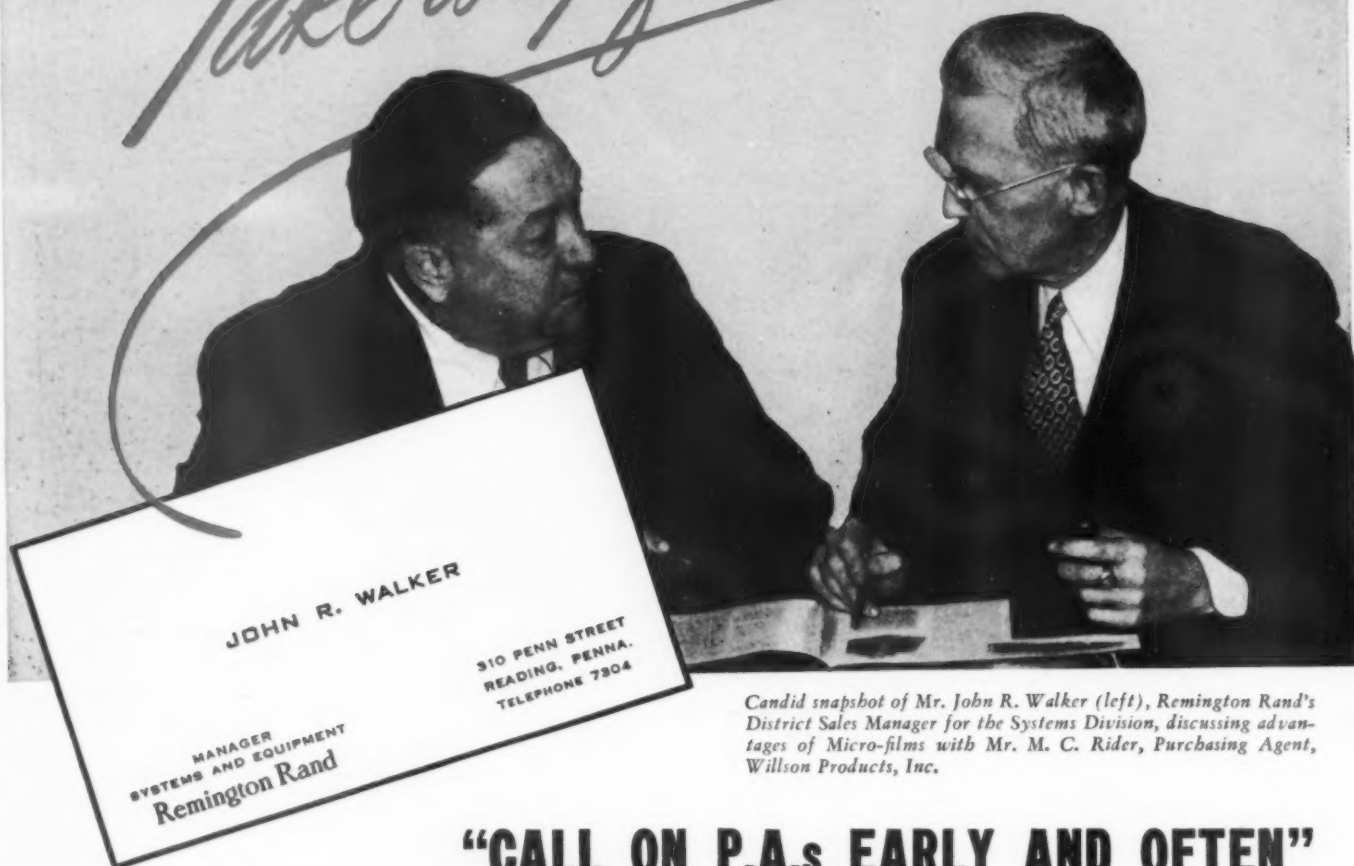
COMPANY

AMERICAN MANGANESE STEEL DIVISION

CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

Take a tip from



Candid snapshot of Mr. John R. Walker (left), Remington Rand's District Sales Manager for the Systems Division, discussing advantages of Micro-films with Mr. M. C. Rider, Purchasing Agent, Willson Products, Inc.

"CALL ON P.A.s EARLY AND OFTEN"

"The Purchasing Agent heads up one of the key departments in any business," says Mr. Walker, Remington Rand's District Sales Manager for the Systems Division in the Reading area. "The profit position of many a business today can be credited mainly to the ability of the Purchasing Agent to find scarce materials and keep them flowing to the assembly line. His paper-work burden is enormous, and we're just the outfit to help him out with procedures especially designed to simplify his job."

"We also consider it of prime importance to keep the Purchasing Agent abreast of our new developments for other departments of his company." Yes! More than ever the P.A. has become the look-out for his company in spotting new products... new methods... new mate-

rials. He makes it his job to bring his discoveries to the attention of the proper officers in his company.

"It's just good hard-headed business sense to call on Purchasing Agents early and often," concludes Mr. Walker. The same holds good for your printed selling. In *Purchasing Magazine* your advertising goes to P. A.'s controlling 85% of industry's purchases. It gets to them EARLY because *Purchasing* is the P. A.'s own magazine—goes direct to his private office without detours. Keep your advertising story before P. A.'s OFTEN with regular insertions in *Purchasing*! Write for complete information to 205 East 42nd St., New York 17, N. Y. Offices in Chicago, Cleveland, Los Angeles.

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



A CONOVER-MAST
 PUBLICATION



A NAME to be remembered-



**Gaylord
Boxes**

**CORRUGATED AND
SOLID FIBRE BOXES**

FOLDING CARTONS

**KRAFT GROCERY BAGS
AND SACKS**

**KRAFT PAPER
AND SPECIALTIES**

It's the trademark of shipping containers and folding cartons that carry your product proudly and safely through every hazardous step of distribution to the final consumer.

For expert help on packaging problems call the nearest Gaylord Sales Office.

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175

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• AMERICA'S FIRST WIRE FENCE •



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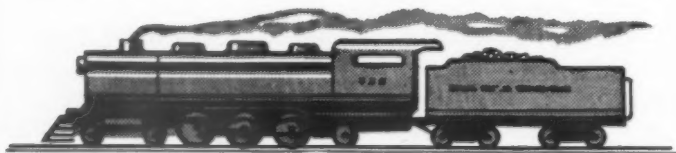
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WRITE FOR MONTHLY TUBE STOCK BULLETIN

Consolidated Military Procurement

(Continued from page 122)

the expense of economy, was the lee-way in price sanctioned to encourage less efficient producers to take war production contracts.

The basic purpose in any future emergency is to accomplish all the purchasing necessary with the least waste and with the maximum efficiency.

The purpose of the Munitions Board now is to discover to what extent consolidation of military procurement will accomplish this aim.

In making up a questionnaire to reveal the broad facts of how consolidated purchasing has affected individual suppliers, Munitions Board staff members accept the fact that exact information is difficult to obtain at this time; but it is felt that out of a number of responses, there will be sufficient information to point up substantial facts.

There is the question of preferences—whether a company prefers to do business with a single agency, or to contact the separate agencies in getting military business. The Munitions Board staff is seeking to determine the reason for these preferences—whether they are purely in the nature of expediency, or whether single department procurement tends to discriminate against them as suppliers.

The Munitions Board staff is seeking to determine whether in shifting from one method of purchase to another, individual suppliers found that they gained or lost business.

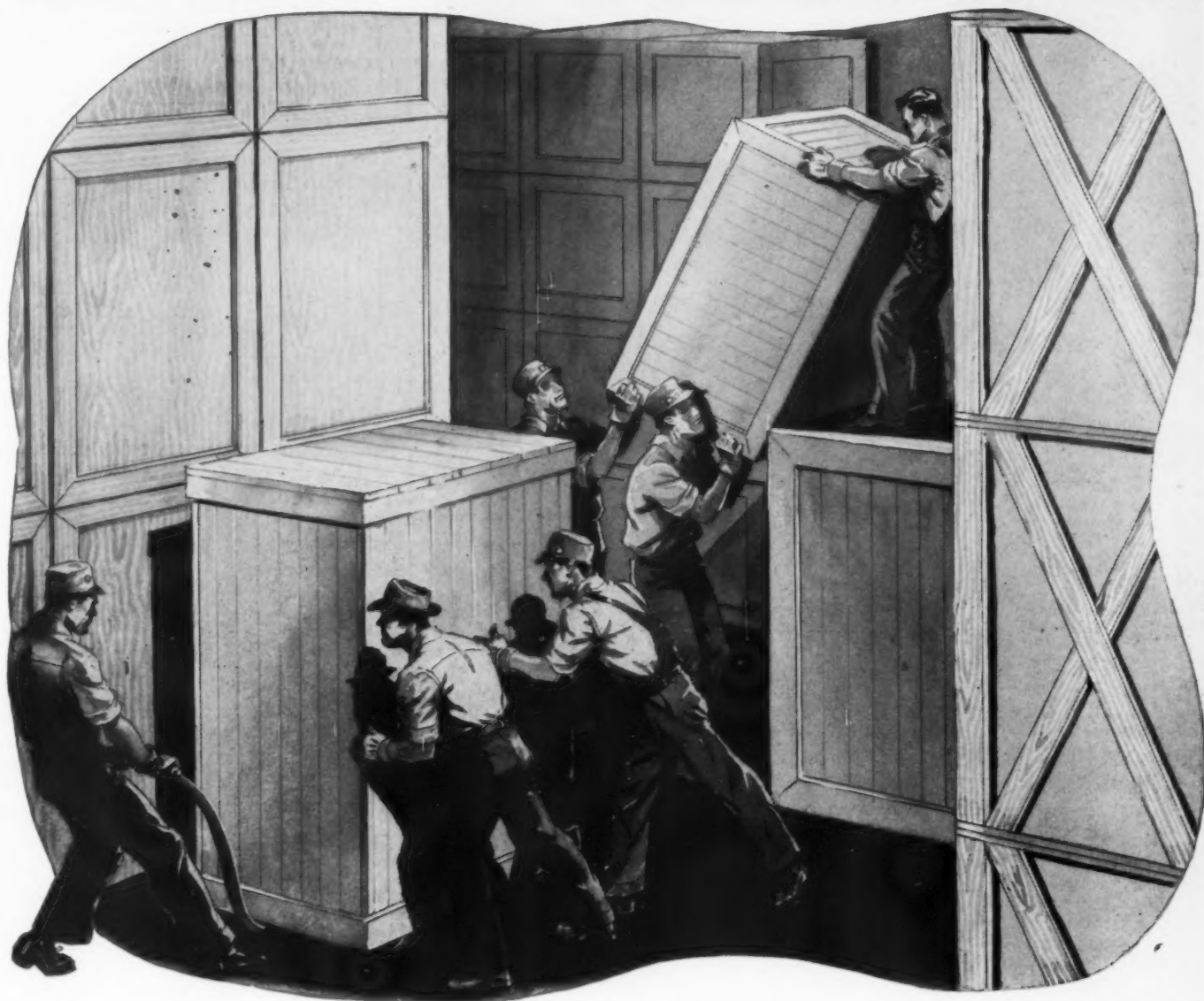
In view of the fact that military procurement was a fairly negligible factor in the economy during the immediate postwar period, and is only just again emerging in importance, the Munitions Board is calling on the companies to be surveyed to project the questions against their past experience in supplying the Armed Forces, as well as their current experience.

A very important question in the survey is the effect that consolidated purchase is having or may have on the purchase of raw materials by the contractor; whether the new policy may permit him more lead time in his placement of procurements; whether it may result in lower costs to him of material—or possibly, whether lead time is cut down, and material costs tend to increase.

The Munitions Board staff is seeking information on how the single procurements approach affects the actual manufacturing process; the effect on length of production schedules; productivity; continuity of pro-

(Please turn to page 322)

ARE YOU IN THE BOX BUSINESS, TOO?



If there are heavy shipping charges on your product because of bulky wooden containers . . . if your warehouse is filled with outmoded boxes and crates . . . then your boxes are consuming more of the time and costs of your business than they should.

SUPERSTRONG boxes and crates are light in weight, can be stored flat to take up only a fraction of the space required by old style boxes, and are quick and easy to assemble — yet their sturdy construction, reinforced with steel, gives them almost incredible strength and durability.

Write us about SUPERSTRONGS—"Bound with Steel." You will find it to your advantage to get all of the facts on these modern and better shipping containers.



RATHBORNE, HAIR AND RIDGWAY COMPANY
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS



AIRCRAFT ENGINES

get the **RIGHT START** when **PERKINS GEARS** "appear in the picture"!

● During the war, Perkins High-Precision Gears contributed to a considerable extent towards the superiority of America's military aircraft. While in the production of planes, the emphasis is now on transportation, many airplane engine manufacturers continue to depend on Perkins Gears for smooth, trouble-free power transmission.

● Our production equipment comprises modern machine tools, and our facilities are ample to meet practically any demands for the mass production and prompt delivery of precision gears. Once your specifications are in our files, reorders are filled automatically.

YOU FURNISH THE SPECIFICATIONS • WE'LL PRODUCE THE GEARS

PERKINS precision,
custom-cut
GEARS

Perkins Makes—in all materials, metallic & non-metallic
Helical Gears, Bevel Gears, Ratchets, Worm Gears,
Spiral Gears, Spur Gears, Ground Thread Worms

PERKINS MACHINE & GEAR CO. • SPRINGFIELD 2, MASS.

Consolidated Military Procurement

(Continued from page 320)

duction; backlog necessary to meet delivery schedules; ability to modify production schedules; whether inspection is simplified.

There is also a question on the effect on the sales forces—whether a consolidation of procurement results in a change in the number of salesmen handling military sales; also whether there is any change in the amount of paper work, or sales expenses.

All the questions are pointed toward the one objective of discovering just what the gain—if any—has been under single agency procurement. The Munitions Board purpose is not to justify, but to develop the facts—so that the facts can be made available to the Congress and for guidance of the Board in formation of procurement policy.

1 1 1

Techniques of Cost Reduction

(Continued from page 95)

investigation it was learned that the supplier added ½ cent for extra handling of the additional four ounces, and ½ cent for additional paint spraying labor on the small added area. Both of these charges were rescinded by the supplier as unnecessary increases, so the net increase approved was 1½ cents per piece. This may seem small, but the principle applies to all negotiations.

I would like to mention one additional method of cost reduction. It is constant review of materials handling and packaging methods of our suppliers, to bring about more efficient operation. We have a specialist in this field assigned to Purchasing who works with our suppliers, our Materials Handling Engineering Department, Packaging and Specifications Department, and our buyers. He investigates shipping and handling problems, develops improved methods, coordinates recommendations for corrective action with buyers, vendors, and engineers, and personally follows through to see that approved recommendations are put into effect.

Our specialist receives notification of a problem by receipt of a shipping complaint on vendor shipped material. He personally looks over the material in its carton, case, or pallet to determine where the trouble lies. Photographs are generally taken of the material in question. If necessary, materials handling engineers are called

(Please turn to page 324)

Weirzin

ELECTROLYTIC ZINC-COATED SHEETS AND STRIP

Reduces Die Cost BY LENGTHENING DIE LIFE

Weirzin has a tight electrolytic zinc coating that lubricates dies without danger of leaving a zinc deposit. Die maintenance expense is thereby sharply reduced, and the life of the die increased.

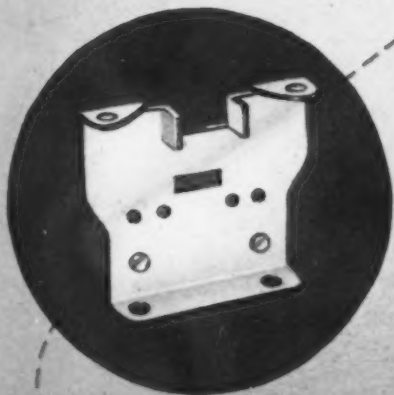
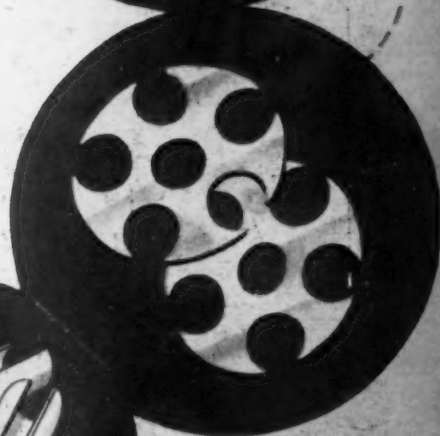
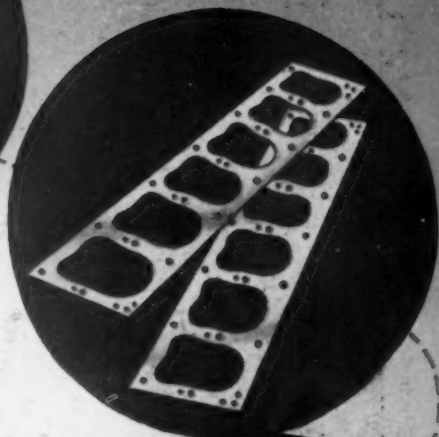
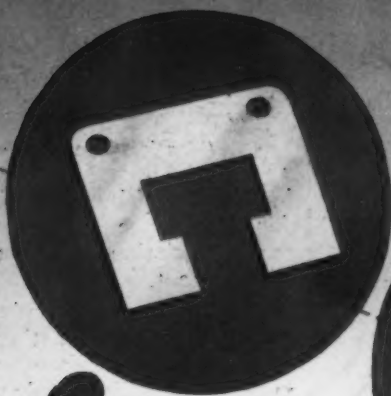
A specific example of this, reported by a fabricator, relates that instead of the usual production run of 100,000 pieces from dies when using ordinary carbon steel, change to Weirzin increased production to over 400,000 pieces. This 300% average increase in production per set of dies is too great a factor in present-day costs to be ignored. You might find such an opportunity in your own plant.

The most severe fabricating operations will not cause Weirzin to peel, flake or powder. Its electrolytic zinc coating remains intact under deep drawing or difficult forming and bending operations without deterioration. For more specific information, write

WEIRTON STEEL CO.

WEIRTON, W. VA. • Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION • Executive Offices, Pittsburgh, Pa.





COMMON SENSE in the shop would seem to call for careful cutting fluid application, because oil that improves one operation may not be right for something different. There just isn't any "one shot" cutting fluid that can do a large percentage of all jobs! Consider all the variables—the wide variety of speeds, feeds, materials, tolerance and finish requirements encountered in machining operations in one shop. Those are the considerations that make it economical in the long run to be sure the cutting fluid you use is scientifically correct. "On-the-job" tests help you determine what cutting oil qualities are needed, and may even result in a decrease in the number of oils now used. It is plain common sense to call in cutting oil experts... people with a sound background of practical experience who can be relied upon to recommend the right cutting fluid for the job.

—Chip

SOLVOL

water mixed cutting compound

Solvol is more than just a high grade, emulsifiable cutting fluid. It is a unique super soluble product with the extra metal cutting qualities that will solve some of your machinery problems and help eliminate production headaches. Ask for literature.

Another Time-Tested
Stuart Product

STUART service goes
with every barrel



D.A. Stuart Oil Co.
EST. 1945 LIMITED

2727-31 South Troy Street, Chicago 23, Ill.

Techniques of Cost Reduction

(Continued from page 322)

in from our Manufacturing Division for assistance in preparing the recommendation to correct the method of shipment.

As a means of keeping informed on new ideas and methods of packaging, our specialist meets with our materials handling engineers, observe their laboratory work, and offers suggestions. He also receives invitations from our supplier plants to visit their shops to solve problems and discuss new methods. He takes an active part in professional materials handling and packaging associations.

We recently completed a change in our method of shipping shock absorbers from vendors' plants. They were formerly shipped in expendable paper cartons which are now being replaced by returnable wood pallets. It is estimated that the savings in purchase price, after allowing for freight costs on the pallet both ways, will amount to more than 3 cents per car. In addition, handling and storage costs at our assembly plants will be cut in half.

A cost analysis just completed on the method of shipping Ford bumpers developed evidence that savings of \$100,000 annually could be accomplished by a slight design change. This change will cut the number of pallets required in half. It will also reduce storage space, transportation equipment, and material handling time by 50%.

A Sound Approach To Cost Reduction Problems

(Continued from page 96)

tion and efficiency?

Some of our business policies are off the beam also. In most lines, business is still terrific, and in some instances we have taken on more than we can handle, which has resulted in higher manufacturing costs, lowered quality, and all too often the dissatisfaction of the very customers we are trying to help. When our business is under too much pressure we lose sight of the fundamentals which normally guide us and we lean on our old friend expediency, compromise with labor, take inferior quality and pay high prices to get materials, and indulge in all the other anaesthetics which ease the pain of the moment. Let's hope the hangover isn't more than we can stand.

As individuals, we are pretty nutty too. For example, I give you the guy paying \$1800 for a 1947 Ford or Chevrolet on a used-car lot.

Incidentally, we find that pallets are not a universal solution to material shipping and handling problems. In some cases where pallets have been used, they have proved to be uneconomical. For example, we have found that fender apron supports can be shipped loose more economically than on pallets. Shipping of passenger car seat frames, a bulky item, is being transferred from pallets to specially equipped cars at a saving.

To sum up this discussion, our first steps in cost reduction at Ford are systematic broad studies of purchased parts and materials under the general direction of our Cost Review Committee. After specific parts are selected, detailed analyses are made in three ways, first through price comparisons with market trends, second, through competitive price comparisons, and third, through detailed analyses of the basic elements of cost.

Obviously this program of work requires time and trained people. At Ford we have invested in both of these with very profitable returns. And I believe our suppliers have shared in these returns as much as we have. Together we have come a long way in meeting our objective of lower and lower costs through purchasing. This, added to cost reduction work which is continuously being carried on in the other major areas of our company—manufacturing, engineering, finance, and distribution—all contribute to more efficient overall performance which is the real measure of economic growth.

In summarizing our cost problems, I believe it is sufficient to say that we are in the midst of—and I hope the end of—a situation which, like Topsy, "just grewed." We all might have different ideas about why things are as they now are, but I think we all agree that our present situation is undesirable and that steps must be taken toward correction. This will take positive thinking and aggressive action. We cannot just ignore this problem in the hope that it will go.

Now, how to approach the problems of costs. My appeal is for us all to adopt and abide by a good business philosophy.

We of the purchasing profession play one of the most important roles in the world's commerce because we are the intermediaries between demand and supply; our ethics, our attitudes and our actions have an effect which is far reaching. That is a very profound statement and I do not make it merely to please you and my

(Please turn to page 326)

TORTURED ON THE RACK FOR LONGER SERVICE LIFE



QUAKER PRE-TESTED PRODUCTS FOR INDUSTRY ASSURE LONG TROUBLE-FREE SERVICE

Test the finished products until they break down! That's the aim of the technical men in Quaker's modern laboratories. The results of these torture-tests are the reasons why Quaker Hose, Belting, Packings, moulded goods and other industrial products stand up so much longer in use. They're pre-tested and performance-proved!

The adhesion test shown is just one of the 18 torture-tests. Here weights are attached to the rubber section of the product for the purpose of stripping off the fabric. Tight adhesion of rubber-to-fabric is an important factor in the long-lasting quality of belting, hose and packings. Checking the adhesive qualities of rubber in Quaker products assures strong resistance to ply separation . . . prevention of product breakdown in service.

For higher plant efficiency and lower operating costs specify long-lasting, pre-tested Quaker Products. Call your nearest Quaker distributor. He and the Quaker sales engineer are teamed to provide accurate recommendations on industrial rubber products.

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QUAKER RUBBER PRODUCTS

custom made for every industrial use

QUAKER Pre-Testing OFFERS INDUSTRY



BELTING FOR MAXIMUM HORSEPOWER TRANSMISSION

Huge flat belts driving large flywheels or small fractional horsepower drives on small motors . . . Quaker pre-testing develops belts for every need of industry . . . belts to assure peak efficiency under all operating conditions.



HOSE THAT STANDS WEAR AND ABRASION

Hose for air, steam, water, oil, gas, chemical, fire or paint, Quaker makes it and makes it to fit the needs of industry . . . each length of Quaker hose is made right . . . pre-testing assures peak performance.



PACKINGS FOR TIGHTER SEALS . . . LONGER WEAR

Quaker packings are scientifically engineered for every use—for pumps, refrigeration compressors, water lines, valves, and the many other places in industry. Each pre-tested for positive performance.

Why pull the well so often?

Use the **ORIGINAL** composition valve cups, seating cups and rings



DARCOVA

YOU'LL SAVE MONEY BECAUSE...

• Precise control of all materials and processes from lab to well means exceptional resistance to wear and deterioration... fewer pulling jobs! • Different textures, scientifically developed, fully proved, give peak efficiency and longer flex-life at any depth! • Precisely controlled sizes for any make or size pump... no misfit inefficiency! • Ask for genuine Darcovas at your supply store.

DARLING VALVE & MANUFACTURING COMPANY



WILLIAMSPORT 7, PA.

A Sound Approach To Cost Reduction Problems

(Continued from page 324)

ego. It is a statement of fact. Every one of us should keep it constantly in mind, and we should be ever conscious of our responsibility.

Our job is unique in that we must be able to see and evaluate all the facets of business. While fulfilling our responsibilities to our own employers we must constantly remember that all business is interdependent and that our dealings with others must be on a plane conducive to the utmost in general business health. In other words, ours is a big job and we must be equal to it.

We should carry this broad gauge business philosophy into our thinking about costs. We should not take the easy way out and merely say that high costs are caused entirely by high prices and try to effect a cure by arbitrarily demanding price cuts from all our suppliers. We should always remember that cost is made up of many things more important than price alone. Our costs are often affected by how we buy. For instance, do we buy the right quantity, the right grade, the right design, and do we have it shipped the most practical way, etc.?

We should always remember that the real criterion is whether our buying methods result in the lowest costs in our own manufacturing operations. In the broadest sense, this is the real core of good business, for low costs are infinitely more important than low prices. Keep costs down and prices will take care of themselves.

The Purchasing Agent cannot achieve the ultimate in cost reductions single handed. He must have the support of management and the co-operation of manufacturing, traffic, accounting, and all other departments involved. The Purchasing Agent can, however, be a great—if not the greatest—factor in the control of materials cost, for his position affords him a vantage point from which he can see many opportunities for cost reduction. He can, and it is his duty to, coordinate the operation of his department with that of others toward lower costs and better operation.

In closing, may I repeat my appeal for a good, sound business philosophy. The world is in a turmoil and it is hard to keep one's perspective, but let's not give way to expediency. Business today, probably more than ever before, needs strong, capable, courageous men. As Purchasing Agents, we should meet these qualifications and accept the challenge of the day.



Griffin Molybdenum High Speed Steel Hack Saw Blades

A SPECIAL Griffin tempering process gives these molybdenum steel blades a toughness and break-resistance that makes them the most economical buy you can find for production metal-sawing. Their keen, hard teeth cut through any alloy except a few of the very hardest. In hand and power sizes at your local Griffin distributor's.

Also Griffin High Speed Steel for hardest alloys; Griffin Soft Center, flexible but TOUGH general purpose hand saw blade; Griffin Non-Strip, for sawing thin sheet and tubing.

Write for free folder.

General Sales Agent

JOHN H. GRAHAM & CO. Inc.

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Hack Saw Blades

MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H. • 1880-1943

THIS WISSCO WIRE
Speeds Power
AROUND CURVES



General Construction of
 Stow Flexible Shaft Core

The facility with which the Stow Flexible Shaft operates around curves lends itself to a wide variety of applications involving transmission of power.

Because the strength and easy operation of the flexible shaft is dependent upon its core, the Stow Manufacturing Co. has established exacting standards for the wire used in core construction. The Wissco Shaft Wire used in Stow Flexible Shafts is a high carbon or low carbon, hard drawn, bright or liquor finish wire, designed to meet the manufacturer's rigid specifications for uniformity in size, tensile and stiffness.

Wissco Shaft Wire is but one of the many Wickwire Spencer specialty wires. Our 126 year experience, plus the fact that we operate our own open hearth furnaces and modern wire mills, enables us to supply anything you need in steel specialty wires, high or low carbon; round or shaped; in a wide variety of sizes, tempers, grades and finishes.

Wickwire Spencer metallurgists are ready to help solve your wire problems—to develop wire that best meets your particular requirements. Send your order or inquiry to Wickwire Spencer.

WISSCO *Wire*

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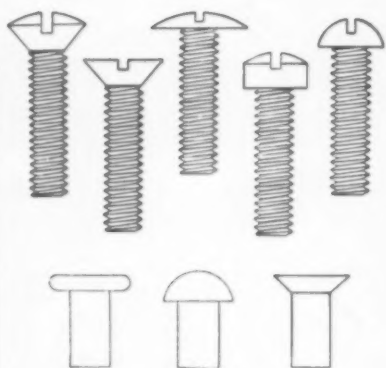
EXECUTIVE OFFICE—500 FIFTH AVE., NEW YORK 18, N. Y. · SALES OFFICES—BOSTON · CHICAGO · DENVER · NEW YORK

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ALLMETAL

SCREW PRODUCTS CO., INC.
33 Greene St., New York 13

Progress in Plastics

(Continued from page 114)

A display of Micarta decorative materials in nine new colors was shown by the Micarta Division of the United States Plywood Corporation, exclusive distributors of the decorative Micarta. They were developed primarily for modern interiors where beauty and utility are desired.

Durez Plastics & Chemicals, Inc., had on exhibit a new high-melting synthetic wax for film coating and for electrical applications; examples of a new molding compound with a percentage of rubber filler, and a new tubing extruded of the Durez phenolic molding compounds.

Among the interesting exhibits was that of Peabody Plastic Products, Inc., of Peabody, Mass., whose exhibit included 15 and 20 gage sheeting designed for the handbag, belt, shoe, luggage, furniture and allied trades. These included Ecraze effects which duplicate genuine alligator leather in an almost perfect match. This company also featured a new treatment of plastic material for furniture trade which it has named "Fabronized." It involves a process whereby a backing is put in the plastic sheet, giving it a better bond, additional strength, and improving its workability.

Name-plates for Plastic Products

The Meyercord Company of Chicago had on exhibit an interesting assortment of Decalcomania name-plates for plastic products which are being marketed under the name of Plasti-Cal. The display also included Vinyl-Elasti-Cals for vinyl products, and a special Elasti-Cal for use on rubber products.

One of the major exhibits at the show was a 28-foot laminated plastic boat which was recently demonstrated at the Philadelphia Navy Yard. The hull is produced from low pressure polyester type resins reinforced with Fiberglas in mat form, and is said to be three times stronger than wooden hulls. It has a 10' 3" beam and 3' 6" draft, and the hull weight stripped is approximately 2600 pounds. The full load displacement is 13,000 pounds with two-man crew and 20 passengers. The decks are molded integrally with the hull, and the color is permanently pigmented in the plastic.

The exhibits included a large number of machinery units for molding, extruding, making plastic preforms, die finishing, and electronic bonding thermoplastic of sheet material. These displays proved of wide interest, for many of them were continually operating in their respective functions.

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NEW SOURCES
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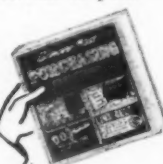
Five separate sections make up this directory—A CLASSIFIED SECTION, containing the names and addresses of manufacturers classified by product—A TRADE NAME SECTION, listing alphabetically the trade name of the product with name and address of the manufacturer—An ADDRESS SECTION, giving the names and addresses of American manufacturers—A CHEMICAL SECTION, listing by product the name and address of important manufacturers—A MECHANICAL DATA SECTION, giving 34 pages of helpful tables, formulas, etc.

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WHAT SOLID SUBSTANCE WILL EVAPORATE?

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WHERE DO CEILINGS SAVE FLOOR SPACE?

When they are used in factories as "Highways" for moving materials. This is made possible through the use of Trolleys, Hoists and Cranes made by ACCO's Wright Hoist Division.



WHAT MAKES STEEL "STAINLESS"?

Usually the addition of Chromium—although there are dozens of types of "stainless steel." ACCO's Page Steel & Wire Division makes a specialty of stainless steel wire, welding rods, electrodes and chain link fence.



ACCO Products Include: AMERICAN Chain • TRU-LAY and LAY-SET Preformed Wire Rope • TRU-LAY Cable and TRU-LOC Swaged Terminals for Aircraft • TRU-STOP Emergency Brakes • PAGE Wire, Chain Link Fence and Welding Rods • CAMPBELL Abrasive Cutters • READING-PRATT & CADY Valves and Fittings • READING Steel Castings • PENNSYLVANIA Lawn Mowers • MARYLAND Bolts & Nuts • "ROCKWELL" Hardness Testers • WRIGHT and FORD Hoists • HELICOID Pressure Gages • MANLEY Automotive Service Equipment • OWEN Silent Springs.

ACCO



AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

Sixth District Conference

(Continued from page 110)

of a tariff on copper. The only thing that prevents this country from being desperately short of the metal, he emphasized, is the ability to import some 600,000 tons of copper a year. To impose a tax on these imports under current circumstances would be to impose inflation by law, he declared.

The tariff on copper was suspended by the last Congress to March 31, 1949, when it will be automatically reimposed unless the new Congress takes action for further suspension. A bill has been introduced to bring about suspension for an additional three years.

The Aluminum Picture

L. H. Gray, District Manager, Aluminum Company of America, stated that ten years ago, this country was producing less than 300 million pounds of aluminum, and that it took a very active sales force to find markets to consume this production. Today the industry is producing approximately four times that amount.

"Although the huge increased demand for aluminum is more than straining the aluminum industry's four-fold expanded production, and thereby causing you as many headaches as it does us, you can derive some satisfaction from the price angle.

"Approximately three-fourths of the production of our company is being sold to you at prices still lower than obtained just before the war. We in the aluminum industry are faced with the same increased labor rates and other increased costs of doing business as any other industry. Although this price angle is not gloomy, the increased demand for aluminum has created some unusual situations. Just as in the automobile industry, where a used car brings a higher price than a new one, we find secondary aluminum selling at prices much higher than primary metal.

"Nothing would please me more than to leave you some word of cheer for the immediate future", he said in conclusion. "The uncertainties of 1949 prevent me from doing this. I do know, however, that we plan to keep turning out a lot of aluminum, and do the best we can to satisfy our many customers. We have been forced to resort to allocations. Based on prior usage, we are even allocating metal to the various divisions of

(Please turn to page 332)

Swing into Mass Production with the UNIONMELT Welding Process . . .

**It is automatic—fast—easy—Makes top quality welds—
Gives maximum production with a minimum of space.**

The extremely high currents that can be used with the UNIONMELT welding process result in deep penetration and high welding speed. The weld metal is clean, uniform, and dense; and requires no chipping or peening to finish it. The UNIONMELT process of welding electrically beneath a protective layer of granulated welding composition is ideally suited to repetitive welding. Material from 16 gage to 1½ inches in thickness can be welded in a single pass with this process. By using the proper UNIONMELT composition and welding rod, alloy steels and even non-ferrous alloys can be welded as easily as the regular grades of mild steel.

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Welding*



*Welding heavy-duty grader wheels
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*Here are the parts that make up
a heavy-duty wheel.*



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Cut Materials-Handling Costs up to 30% . . . They eliminate heavy physical work . . . speed production by maintaining a steady flow of materials . . . free men for more important jobs. And they save up to 30% of your manufacturing dollar. Lamson Engineers can design, build and install Conveyors in practically any plant, warehouse or factory.

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Name of company

Address City State

My name and position

Sixth District Conference

(Continued from page 330)

our own company—a policy which, in its application to our customers, we believe, is the only fair and just one."

The Right Material

Dr. George Perkins, Technical Director, Reynolds Metal Co., stated that one of the big problems confronting aluminum suppliers, is to get customers to supply the right type of material or alloy for the proposed use. Users should give consideration to the various physical factors involved, and in case of doubt, the matter should be submitted to the representative of some aluminum company, or others familiar with the different grades of aluminum, to make sure that the material specified is the material needed for a particular use. He suggested that "there is aluminum available for any application, if it is properly selected."

President Keefer at Banquet

President Ralph Keefer of the National Association addressed the annual banquet on "Our Professional Obligations." He was introduced by E. L. Clayton, Director of Purchases, Philip Carey Manufacturing Company, and N.A.P.A. Vice President for District No. 6.

Mr. Keefer emphasized that a primary obligation of the men in purchasing is to see that the personnel of their chosen profession, with their respective companies, is built up and maintained at a high quality level. He stated that new problems are constantly facing the men in purchasing, and that it is incumbent upon them that they build their purchasing departments so that they can efficiently analyze and handle present and future difficulties.

In this connection, he quoted D. A. Hulcy, president of the Lone Star Gas Co., Dallas, Tex., to the effect that "whoever is entrusted with the duty of purchasing holds the safety of the entire organization within his hands; that no division, no part of business has a greater responsibility placed on it than the purchasing department, and that there is no other managerial function quite so decisive of the success or failure of a business, than purchasing."

Concluding his talk, Mr. Keefer urged that purchasing men become more active in promoting the theory of free enterprise. We must become more articulate, he said, in showing why free enterprise and our competitive system are best for the greatest number.

Next on the dinner program was James E. Gheen, publicist of New York City, who provided the 350 persons who attended the banquet with a rollicking hour of clean cut humor and fun, in proving his subject, "Little Do We Know."

The Tuesday morning sessions commenced with one on "Fuels" and one on "Industrial Chemicals", held simultaneously. The former was presided over by T. W. Marz, Purchasing Agent, Newport Rolling Mill Division, International Detrola Corp., Newport, Ky. The speakers were Charles Dorrance, President of the West Virginia Coal and Coke Corp., and R. J. Boynik of the Standard Oil Company of Ohio.

Fuels and Chemicals

Mr. Dorrance stated that many of the coal producers still find themselves in the position of having to operate six days a week to fill their commitments. "You gentlemen will be, and most probably have been offered coal at prices less than the fair market prices," he said, "just as in the past you had to pay materially in excess of the fair market price. My only word to you is this: No one ever benefitted his company by buying poor quality coal and in paying transportation charges on incombustible coal."

Commenting on coal cleaning, he expressed the opinion that the only real problem economically and commercially unsolved in bituminous coal cleaning, is the efficient purification of the smaller sizes. From a commercial standpoint there is a broad market for small sized coal after its ash content has been brought down, and utilities and industrial consumers who pulverize their nut and slack and who analyze their purchases on the delivered cost per million btu rather than per delivered ton, will accept it readily.

Chemicals

The Industrial Chemicals meeting was presided over by Andrew Lincoln, Purchasing Agent, Wm. S. Merrell Chemical Co., Cincinnati. The speakers were Dr. L. S. Roehm, Manager of Technical Service, Dow Chemical Co., Midland, Mich., and Clayton Wolfe, Vice President and Director of Purchases of the Monsanto Chemical Company, St. Louis. Mr. Wolfe's paper appears elsewhere in this issue. His listeners found it an excellent review of the present market situation in chemicals.

Dr. Roehm's paper was entitled, "From Research to Sales." He presented a case history of how a new

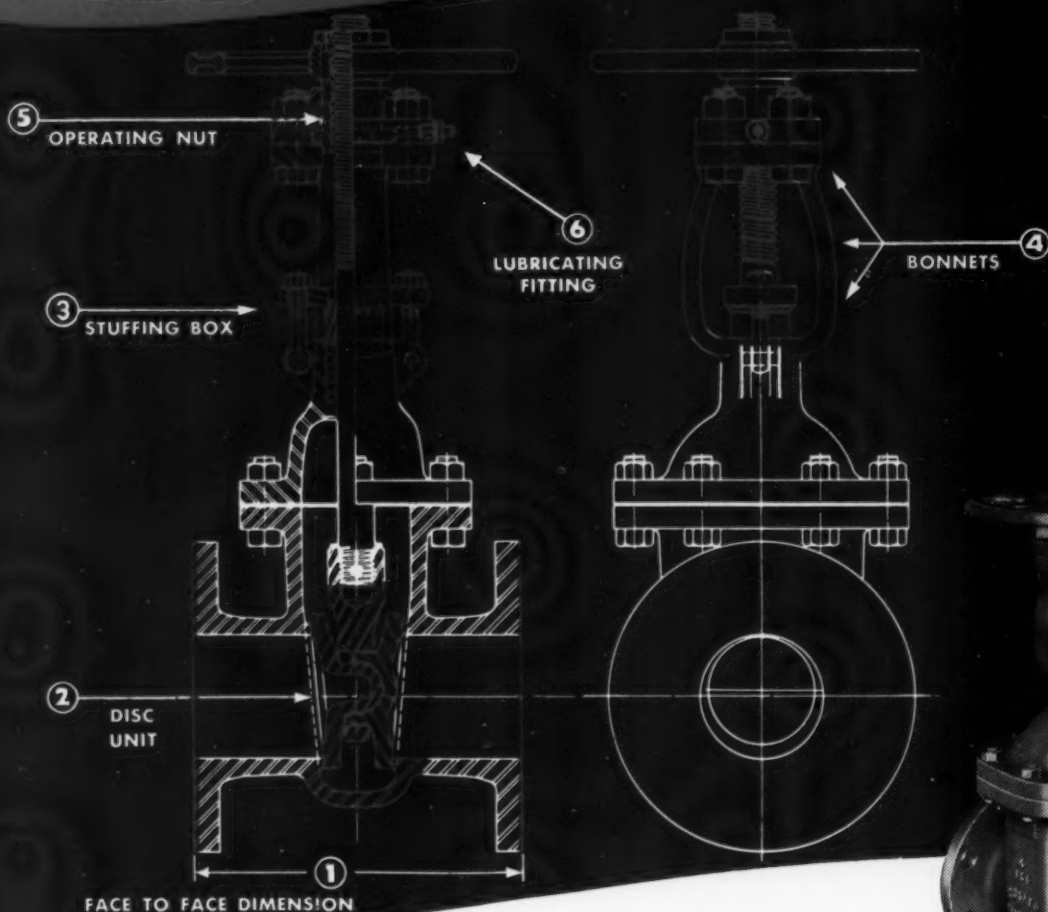
(Please turn to page 334)

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1. FACE TO FACE DIMENSION

Meet American standards B-16-10-1939 enabling the replacement of valve in a line without cutting or disturbing that line.

2. DISC UNIT

Adjusts itself to the seats in the valve body regardless of angle. Positive sealing insured on the upstream or downstream sides of the discs.

3. STUFFING BOX

More adequate in depth to insure tightness and maximum packing life.

4. BONNETS

Have the exclusive Cooper "Valves That Breathe" feature which compensates for expansion and contraction due to temperature changes without damaging the stem or operating nuts.

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"Replaceable Operating Nut" eliminates line shut down or breaking of Bonnet Joints.

6. LUBRICATING FITTING

Feeds lubricant to operating nut insuring ease of operation.

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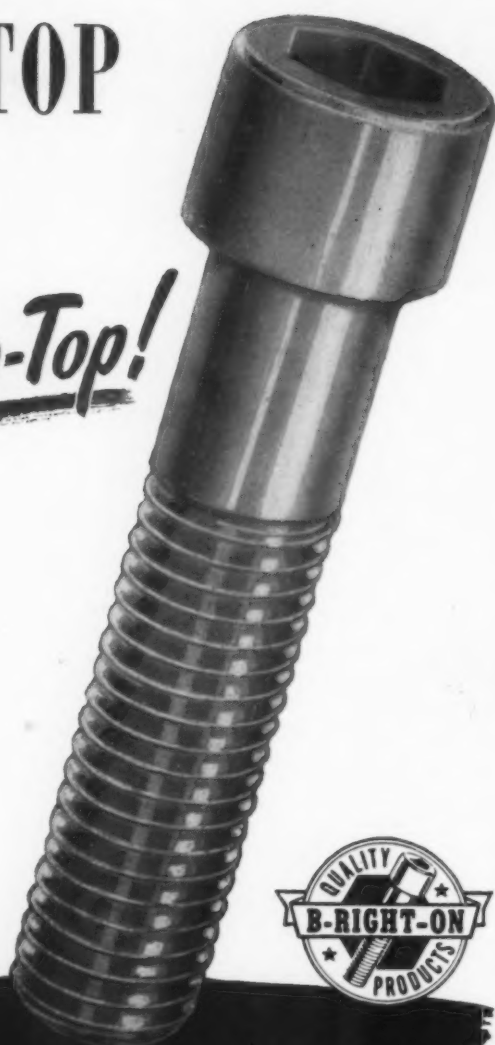
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For top-quality that's always dependable, count on B-Right-On Socket Screw Products. Complete line includes Hollow Set Screws, Socket Cap Screws, Hollow Pipe Plugs and Stripper Bolts.

Production runs solicited.

We have completely revised our list prices and sizes carried in stock. We will be pleased to send you a copy of this new list on request.

Dealers — Our large, complete and centrally located stock is at your service. Investigate this fast-moving, profitable line.

The BRIGHTON Screw & Mfg. Co.

1845 Reading Road
CINCINNATI 2, OHIO

Sixth District Conference

(Continued from page 332)

product is developed from scratch, how it is analyzed by research groups and others to determine just where it "may belong"; the study of production costs, and the making of preliminary market surveys, and the various steps taken before a product is finally put on the market.

The development of a new product, he said, is based on the combined efforts of laboratories, semi-plant production, commercial plant production, market research, and sales and development. It is like a game of football, he said, where it takes eleven men with team spirit and cooperation to produce a touchdown.

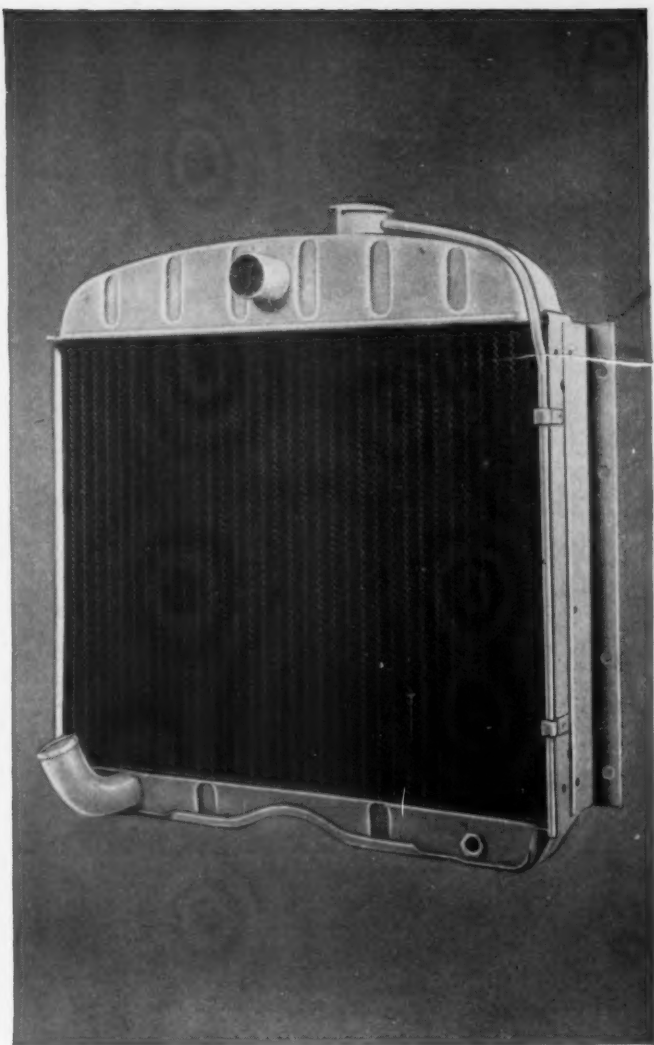
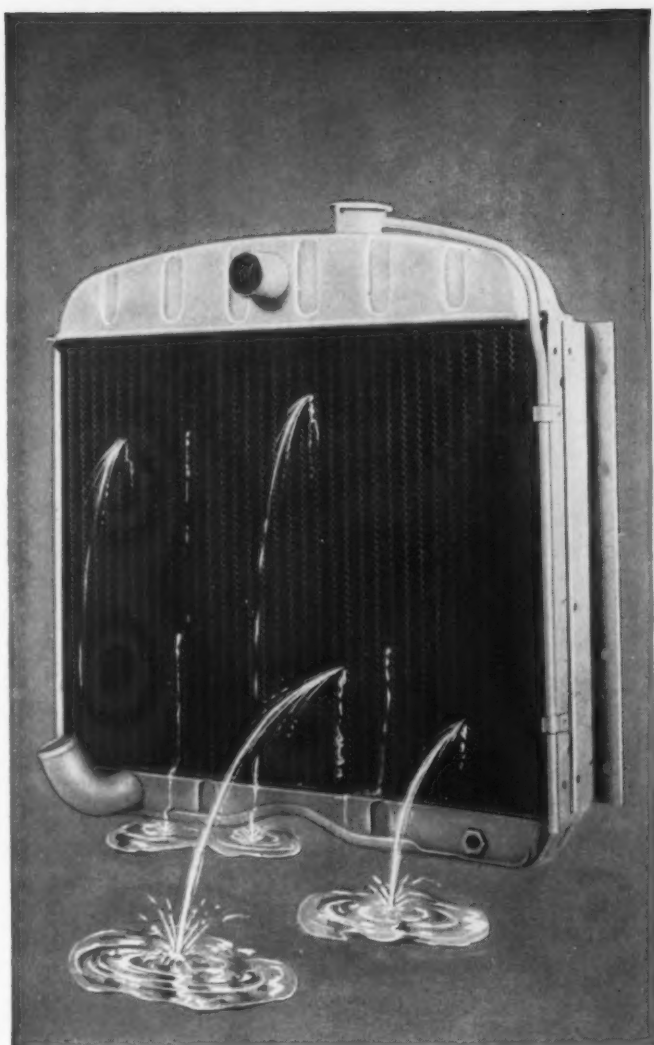
Iron and Steel

The concluding session of the Conference was on Iron and Steel. This meeting was presided over by Jac Breese, Vice President, Breese Bros. Co., Cincinnati. The speakers were R. M. Allen, Vice President, Allegheny Ludlum Steel Co., Pittsburgh, J. A. Ingwersen, vice president, Armco Steel Corp., Middletown, Ohio, and Dr. G. V. Slottman, technical assistant to vice-president, Air Reduction Sales Co., New York City, whose paper on "The Use of Oxygen in the Manufacture of Iron and Steel", appears in this issue.

Mr. Allen, presenting a non-technical talk on stainless steels, said, "It is unfortunate that the word 'stainless' has been applied to these steels, since that word is not completely descriptive of their characteristics. It implies an overstatement as it refers to the permanency of surface, and at the same time is an understatement through the complete omission of many properties such as high strength, resistance to oxidation at high temperatures, high fatigue values, etc., which they possess to a remarkable degree in addition to their non-corrosive properties."

He expressed the opinion that the use of stainless steels will greatly expand within the next few years in a multitude of industrial and consumer applications. It is increasingly finding acceptance as an architectural and construction material. The field for stainless wire products is almost virgin, and there will be broad uses in power transmission lines, catenary construction, insect screens, woven mesh for filters, and many other uses. With proper heat treatment, the material has approximately the same rate of expansion and contraction as glass, and means have been found for

(Please turn to page 336)



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- 231 Heat resistant operations
- 101 Solvent resistant—for paint masking; often re-usable
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Sixth District Conference

(Continued from page 334)

bonding the metal and glass together to effect a sound and permanent joint.

The speaker declared: "In spite of the recent price increases in our industry, brought about by increased costs, I believe the long range trend in stainless steel costs and prices is definitely downward. Since the development of stainless in the early '20s, there have been many improvements in the art of manufacture which have contributed importantly to cost savings. Nevertheless, basically we are still melting, blooming, slabbing, rolling, and finishing the various stainless products in substantially the same way we were at that time, and we are still throwing away, through losses from ingot to finished product, by reason of cropping, grinding, chipping, etc., an average of over 40% of the total. These yields must and will be improved, not only because of economic necessity, but because it forms the objective of so much research in our laboratories. They recognize, as we do, that the future of stainless depends on lower selling prices, and lower selling prices depend on improved methods of manufacture and greatly increased yields. This is the long range view."

* * *

Greater Use of Raw Materials

(Continued from page 141)

is difficult to absorb, and it must be passed on to the consumer by the utilities in much the same manner as the increased cost of food and other goods.

Power Development and Cost

We are delighted to read in our daily paper, in quite recent issues, the story of how the Cincinnati Gas & Electric Co. had defeated the efforts of the City Council to force it to reduce the electric power rate by 15%, and received a rate increase from the Public Utility Commission of Ohio that will add two and one-half million dollars to its annual revenue. This decision means that the electrical customer will pay from 52¢ to \$3.15, or an average of 2¢ a day for the utility service in his home. A rather significant statement is made by the Commission in this decision. I quote: "— is to provide service at a price which is reasonable in light of all the relevant facts and a compen-

(Please turn to page 338)

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Finding the right tube—Seamless or Welded—for ANY pressure or mechanical applications in your plant or in equipment you make—is a simple problem when you call on B&W. In B&W tubing you have the widest choice of analyses available from one source . . . including a full range of SAE-AISI steels, and seamless and welded stainless grades.

Centralizing your tube requirements for ALL purposes at B&W also gives you the benefit of more than forty years research, engineering and manufacturing experience in supplying high grade tubing of ALL types for ALL purposes.

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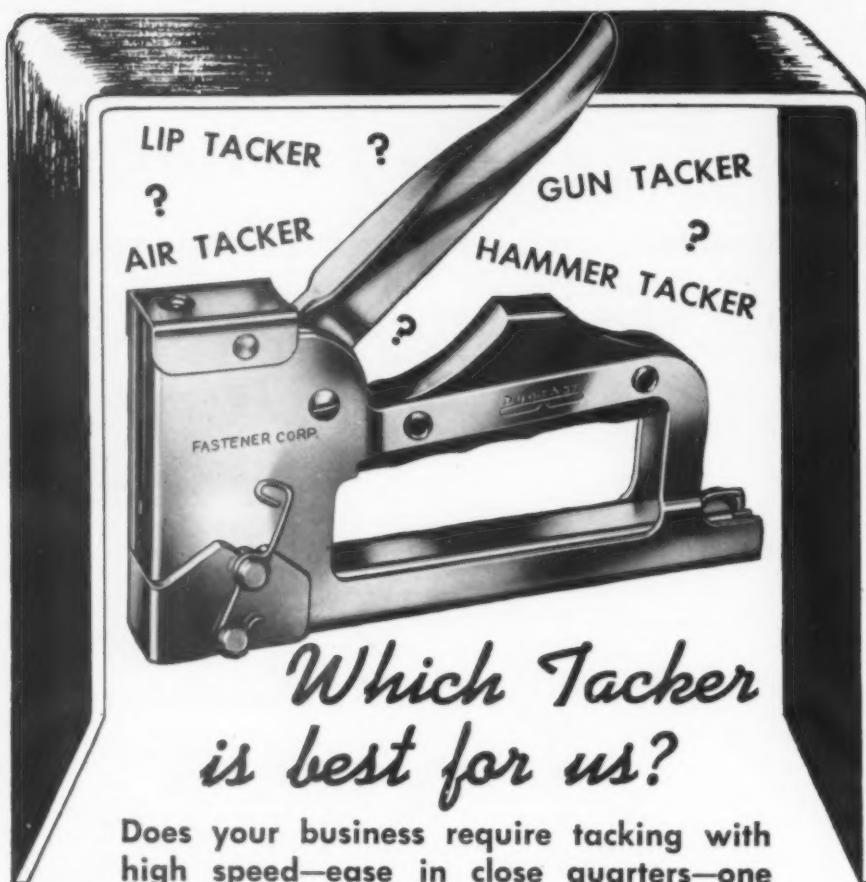
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THE BABCOCK & WILCOX TUBE COMPANY
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**HAMMER GUN AND AIR
TACKERS AND STAPLES**

FOR REDUCED PRODUCTION COSTS

DUO FAST

Greater Use of Raw Materials

(Continued from page 336)

sation that is just when related to the value of the property employed and the risk of loss involved." Another quotation which is of note is as follows: "— is to preserve credit, attract capital and render high quality service. It must earn enough to accumulate some surplus over and above the amount required to pay interest and dividend requirements on securities."

It is worthy of note that this increase was the first residential electric cost rise in forty years. This, in the light of the fact that Cincinnati and vicinity have had for the last twenty years the lowest or next to the lowest rates in the whole United States! During the last few years, coal has tripled in cost, labor has increased its cost by 70%, and the electrical equipment that must be purchased, such as turbines, has practically doubled. This decision points a way for many other decisions in the United States which are much needed at the present time. If the Public Utilities are to keep pace with the rising cost of materials, supplies, and labor, it will be necessary for them to have larger earning ability on the service they render to the public.

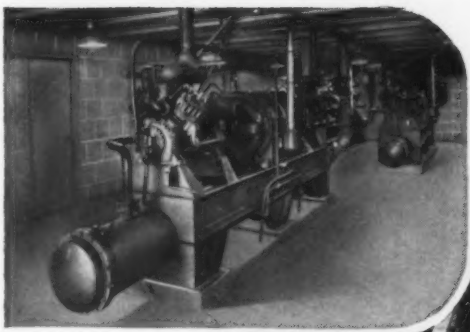
At a time when practically every bit of power being generated is utilized and sold, it is possible to get by with the present rates—but permit the Utilities to drop to where they were in '32 or '33, and the loss on the service to the Company would be tremendous. Utilities must prepare themselves for hard days ahead when they will need a substantial rate increase in order to break even and perhaps earn a reasonable return on their investments.

Mechanization for Progress

One of the factors in the industrial progress of this country has been the development of power driven equipment such as machine tools, ovens, and material handling equipment, by means of which raw materials have been manufactured into the products which we use.

Along with the development of this equipment has been the development of electric power to operate the machines. Without electric power in the form of motors and control, such machines could not have been developed to their present state of efficiency. Picture for yourself the machine shop of 30 years ago with its equipment driven by a line shaft with numerous belts and pulleys, the whole

(Please turn to page 340)



One of 6 compressor rooms located on the roof of the G-E plant. Each room houses six 60 hp General Electric Condensing Units.



We take our own medicine



Interior view of air conditioned General Electric plant which covers 588,000 square feet of space.

In plant after plant...in process after process...General Electric has pioneered in the use of air conditioning and refrigeration as a tool for better, faster production.

Out of such practical experience has come the wide variety of G-E heat transfer equipment now being used in industries all over the country for such diversified tasks as anodizing aluminum...precision assembly of small parts...grinding huge gears to close tolerances...cooling quench baths.

Your own plant may have one or more departments where G-E air conditioning or refrigerating equipment can boost quality or speed production. Ask your G-E Contractor or Distributor for information...or fill in the coupon below for free G-E Book, "New Industrial Dimensions."



FOR PRECISION MANUFACTURE OF ELECTRIC MOTORS

In a midwestern General Electric plant manufacturing G-E fractional horsepower motors, air conditioning plays a vital role in quality control. The construction of the motors is improved by the proper maintenance of temperature and humidity in both summer and winter. The photos show some of the G-E cooling and heating equipment used.

There are 12 such coil banks in 12 large central plant conditioners containing heating coils, direct expansion cooling coils, fans and air filters.

GENERAL ELECTRIC

Industrial Refrigeration and Air Conditioning



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"New Industrial Dimensions" describes 17 important applications... gives photos and diagrams of basic heat transfer methods.

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**PAGE STEEL AND WIRE DIVISION
AMERICAN CHAIN & CABLE**
In Business for Your Safety

Greater Use of Raw Materials (Continued from page 338)

system being operated by a single motor. The power required was small compared with our present-day standards, since the machines were not designed to handle heavy loads. As industry developed, the need for improvement in the design of this equipment became apparent; and machines were developed to meet this demand. The electrical industry was called upon to furnish better methods of driving these machines and individual motors were mounted directly on the machines, eliminating the line shafts. In many applications, several motors were used on one machine to perform functions formerly done by mechanical means. Special controls were used, thus simplifying the design of the machines, making them more efficient, and enabling the operator to turn out a better product with less effort.

Better steels for cutting tools and dies were developed by means of which machine tools could be operated at higher speeds with greater accuracy, absorbing heavier loads and improving the products made by them. This resulted in an increase in horsepower required to operate them. Improvement in the quality of the products made on these machines led to improved lighting in the plants, as well as improved heating and ventilating systems.

Although we have made great progress in developing our manufacturing processes in this country, there is still much to be done to cut costs, maintain quality and increase output. To do this, we will need to replace obsolete equipment with modern tools which will be capable of meeting the needs of industry in the days ahead.

Voluntary Allotments of Steel

(Continued from page 104)

amendment reads in part as follows:

"The President is empowered through the Secretary of Defense to require all producers of steel in the United States to make available to individuals, firms, associations, etc., having orders for steel products or steel materials required by the armed forces, such percentages of the steel production of such producers in equal proportion deemed necessary for the expeditious execution of such orders for such products or materials. Compliance with such requirements shall be obligatory on all such producers of

Vision and foresight will accomplish this end.

The inevitable course of materials is upward. It has been so for 50 years, with the exception of times of depression when there is a surplus of materials. War pushes costs higher and higher, which was true in the first World War and was more true of the second World War. These upward adjustments are never reduced to the former levels. Therefore, the resulting course is upward in price and cost. Added to this, labor, which must have more income to fill food baskets, to adequately clothe and house its children and themselves, cannot be deflated and wages brought back to those of many years ago, unless the whole economic structure is reduced so that the matter of cost and income is brought more into balance on a lower level. Adding all these elements together, it is not hard to achieve an answer that is quite apparent—prices inevitably rise over the long run and we must prepare for such rise.

It is not my purpose to bring a blue picture, for I am a real bull on the future of America's industry. We have a real future. Our scientific development over the past few years has been tremendous. We have more scientists and engineers working on improvements than ever before. This country's young men of today have a better opportunity than we who were coming into business careers in the 1900's, 1910's, and 1920's. I hope young men everywhere will take hold of the forelock of opportunity and make the most of the great industrial structure on which America has been built. There is real chance for aggressive thinking, fast action, and all the technical knowledge available in the world today.

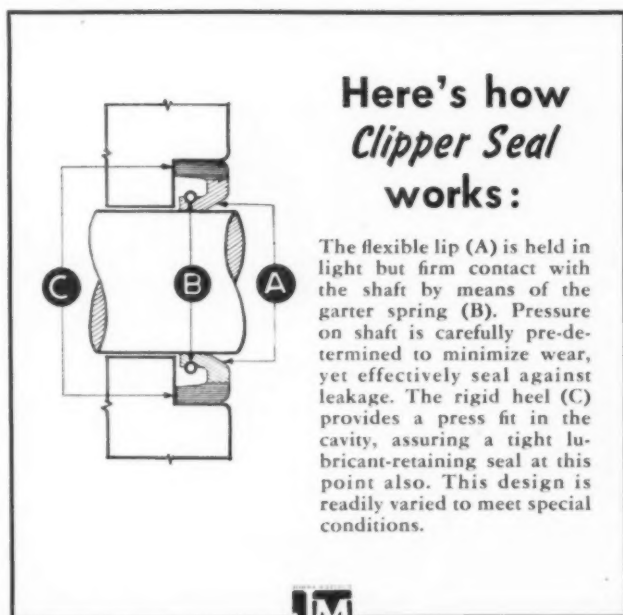
steel and such requirement shall take precedence over all orders and contracts theretofore placed with such producers. Any such producer of steel or the responsible head or heads thereof refusing to comply with such requirement shall be deemed guilty of a felony and upon conviction thereof shall be punished by imprisonment for not more than three years and a fine not exceeding \$50,000.00."

To date the President has not exercised this power to procure steel for the armed forces, but has asked the Secretary of Commerce to include military needs in the Voluntary Allotment program.

(Please turn to page 342)



EVER SEE AN OIL SEAL AS SIMPLE AS THIS ONE?



Here's how *Clipper Seal* works:

The flexible lip (A) is held in light but firm contact with the shaft by means of the garter spring (B). Pressure on shaft is carefully pre-determined to minimize wear, yet effectively seal against leakage. The rigid heel (C) provides a press fit in the cavity, assuring a tight lubricant-retaining seal at this point also. This design is readily varied to meet special conditions.



THE JOHNS-MANVILLE CLIPPER SEAL consists of only two parts—a one-piece moulded body and a specially designed garter spring, factory-assembled into a single compact unit.

This simple design, so different in principle, provides advantages not found in most conventional type oil seals. It permits unusual compactness and economy in designing oil seal cavities. It allows greater bore tolerances—since no metal case is used. It offers high corrosion-resistance—since Clipper Seal's body is entirely non-metallic. And it assures positive sealing with efficient, long-term bearing protection in a wide range of industrial oil seal applications.

Clipper Seals are made in both split and endless types and are available for shafts up to 66" in diameter. They are recommended for sealing against oil, grease, water, air, grit and coolants at operating temperatures up to 450° F.

For further information, write for brochure PK-31A. Address Johns-Manville, Box 290, New York 16, N. Y.

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Air nozzle with general purpose nose. Nozzle may be had with any or all of the noses illustrated below.

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- ★ **Body Made of Heat Treated Duraluminum Forging**
- ★ **Unusually Strong, Durable**
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- ★ **Safe Comfortable Grip**

For hard use and long life in machine shops, steel mills, foundries, forging plants, factories, garages, repair shops, service stations, etc. Has 4 quickly interchangeable noses. Neoprene washer withstands oils and acids in air. Self-cleaning seat. For all air lines. Has 1/4" female I.P.T.

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TUBE WORKING TOOLS • PRODUCTION AND MAINTENANCE AIDS • WELDING EQUIPMENT

Voluntary Allotments of Steel

(Continued from page 340)

Public Law No. 395, however, expires February 28, 1949. Programs set in motion under its terms can be extended for six months beyond that date. At best, then, programs activated before March 1, 1949, can be continued until August 31, 1949, but none can be brought into existence after next February 28. The government is therefore now attempting to determine what next step should be taken. Of course if we should have to go to war, there is little doubt the Voluntary Allotment programs will be thrown out the window and the presidential power granted by the draft amendment could immediately be invoked for mandatory priorities on armed forces' requirements. If such an un hoped-for eventuality does not occur, it is our belief that a revised extension of Public Law No. 395 would be in order. I say revised because the terms under which we are now operating are on too broad a base.

"Stabilizing Economy", "Curbing Inflation", and "Preventing Maldistribution of Goods Which Basically Affect the Cost of Living" can mean most anything. We feel strongly that the country's needs will be properly served and, critical requirements properly filled if a future Voluntary Allotment program is based only upon the requirements for national security. "National Security" should include only direct or indirect military requirements. In this event, the base for voluntary allotment programs would be limited in such a way that we believe would make it workable under any conditions short of actual war. It would also, and importantly, eliminate at the source many programs which should not win consideration.

1 1 1

The Smaller Producer

(Continued from page 117)

which rotated in different directions and at different speeds, was being developed. Obviously, the bearing problems were difficult.

There had been a series of experiments involving the procurement of bearings from various makers, installing them in the company's laboratory model of the machine, and trying them out. The delays while waiting for new samples, reporting back to their makers, and obtaining further ones which might overcome the deficiencies of the first lots, had been considerable.

(Continued on page 344)

THE SAFE OPEN STEEL FLOORING IS TRI-LOK



No object over 1/2 square inch can pass through super-safe U-Type Tri-Lok Flooring. Fabricated without bolts, rivets or welds, it is unsurpassed for plant installation, walkways, loading platforms. Efficient distribution of concentrated loads... maximum free opening for light and air. Write for Bulletin JV-1140.

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"PARTS OFF" MANY MATERIALS—All hot and cold rolled rods, Stainless Steel, Chrome Molybdenum, Copper, Brass, Aluminum, Bi-metals.

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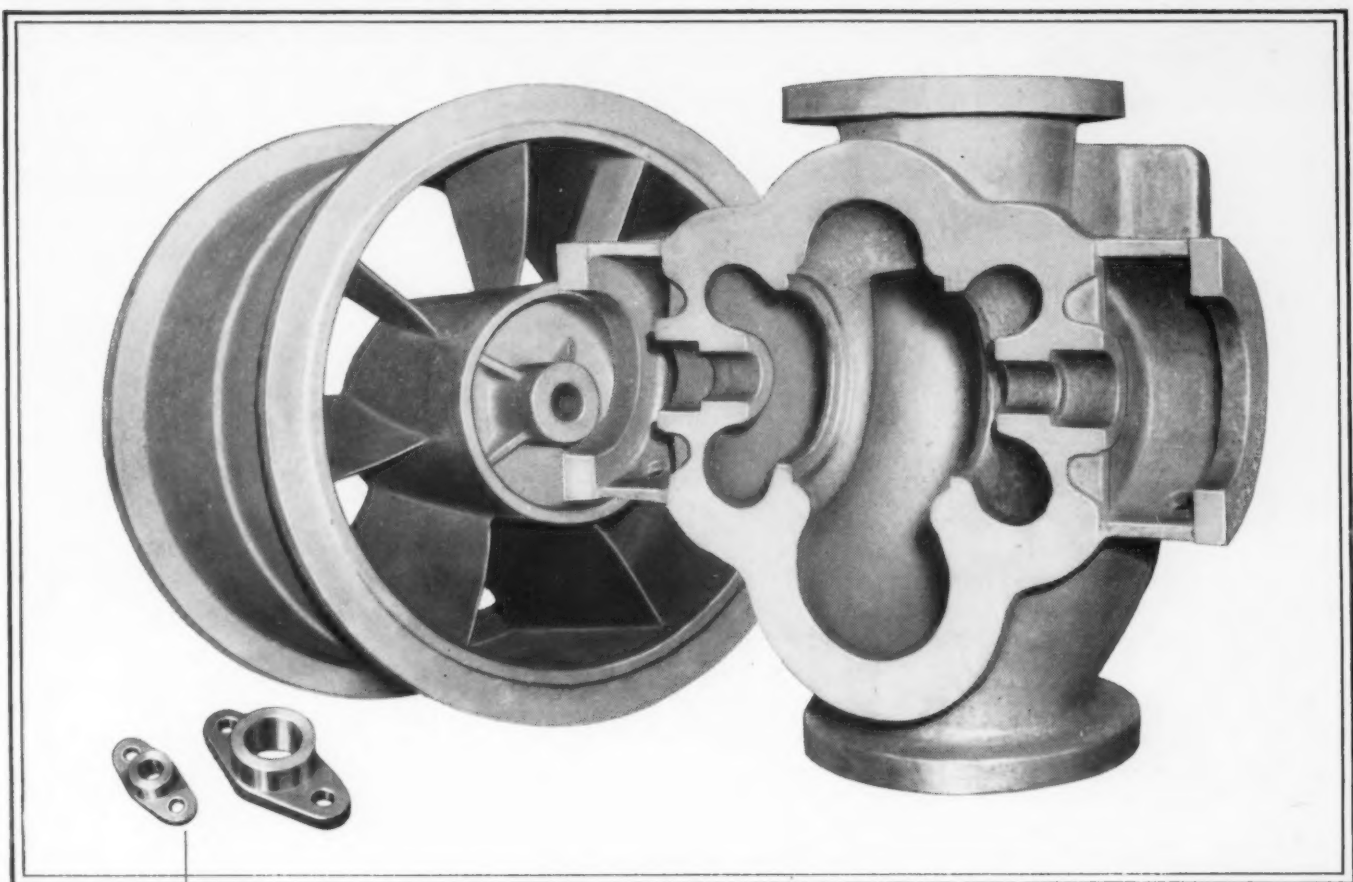
Shows parts produced without die expense by DI-ACRO Benders, Brakes, Shears, Rod Parters, Notchers, Punches.



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"Custom-Engineered" Castings — for Long Range Economy

*For longer, more economical service, N-B-M non-ferrous structural castings
are tailor-made to your own specific application*

Seldom are two structural casting problems precisely the same. A pump housing, for instance, presents certain requirements, while an impeller may call for a completely different alloy and casting technique.

Because of these innumerable combinations, N-B-M engineers make a specialty of research and manufacturing development — an approach that in the last 74 years has built up a tremendous backlog of experience in solving the most complex problems of casting design.

The unique engineering service of National Bearing Division includes a complete study of the important factors involved in each casting application. The unvarying result of this N-B-M service is

to find the answers to such problems as:

The Proper Alloy—for long, trouble-free service and increased resistance to corrosion.

The Proper Casting Design—for a high factor of strength to handle safely the projected loads, pressures and stresses.

The Proper Casting Technique—for close tolerances consistent with maximum economy and ease of finished machining operations.

Any successful application of a structural part—large or small—depends on the correct solution to these basic problems of design. Let the specialized approach and broad experience of National Bearing Division find the right answers for you.



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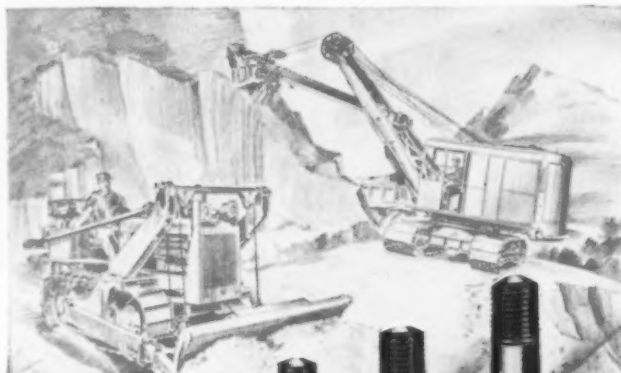
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to cut your costs,
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THE
Lord Baltimore Hotel
BALTIMORE 3, MARYLAND

The Smaller Producer (Continued from page 342)

One smaller producer of bearings having shown ingenuity in meeting problems, the laboratory model and the development engineer were sent to his shop. Located right at the source of supply, fresh samples could be produced with the least delay, and the shop proprietor was instantly available for the applying of his special genius to the solutions of troubles as they developed.

Shop time was paid for on a per hour basis, but the price was low since the smaller producer could be assured of worth while orders once the problems were solved. Within three months the development engineer was back home with a machine in which the bearings were completely satisfactory.

It is not always necessary for the development engineer to accompany the experimental machine. A mixing machine was sent to a small producer of molded plastics products with the simple instruction "get your molded nylon gears into this". Within six weeks the model was back, complete with a quotation which enabled the gears to go right on to the production line.

Cutting Down Rejections

A purchase engineer shipped a portable X-ray equipment to a smaller producer or precision castings, sent a technician along to operate it. Rejections of delivered castings had been running over 50% and there was no sign that any other casting house wanted the business.

The inspection machine found the defective castings before any finishing operations had been performed upon them, and thus effected an immediate saving represented by the costs of operations which the casting house formerly had performed on castings which later had had to be rejected. Even more important, on-the-spot inspection showed which production lots ran highest in defects and led to improvements of techniques so as to materially reduce the percentage of rejections.

On these bases the purchase engineer was in position to ask for price reductions, but he encouraged the casting house to devote part of the savings to the purchase of X-ray equipment of its own and to the retaining of the technician in its employ. The result was to increase the value of this house as a general source of supply.

There is no phase of management
(Please turn to page 346)

POWELL VALVES cover all Industry



To meet the requirements of every industrial flow control service known today, Powell makes a complete line of valves in Bronze, Iron, Cast Steel and the greatest variety of Corrosion-Resistant materials ever used in making valves.

We cannot introduce "Powell Valves for Corrosion Resistance" as a new feature, because with us they are long past the introductory stage. In fact it was more than 25 years ago that the Powell Special Design and Alloy Valve Division was established.

But we can feature the fact that today Powell makes the only *complete line* of Corrosion-Resistant Valves available to the Chemical and Process Industries.



Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", inclusive. Has outside screw rising stem, bolted flanged yoke and tapered solid wedge. Also available in All Iron for process lines.

Fig. 500 — 125-pound Bronze Gate Valve with screwed ends, screwed-in bonnet, inside screw rising stem and tapered wedge, solid or double.

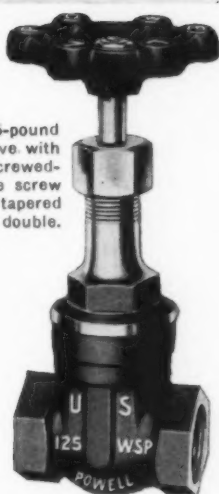
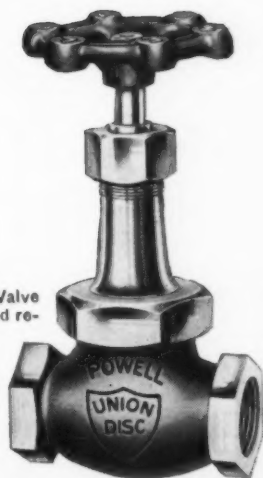


Fig. 150—150-pound Bronze Globe Valve with screwed ends, union bonnet and renewable composition disc.



For full information on applications of Powell Corrosion-Resistant Valves, refer to Powell Catalog No. 242. If you do not have it, write, on company stationery, for your copy NOW!



Fig. 375 — 200-pound Bronze Gate Valve with screwed ends, inside screw rising stem, union bonnet and renewable, wear-resisting "Powellium" nickel-bronze disc.

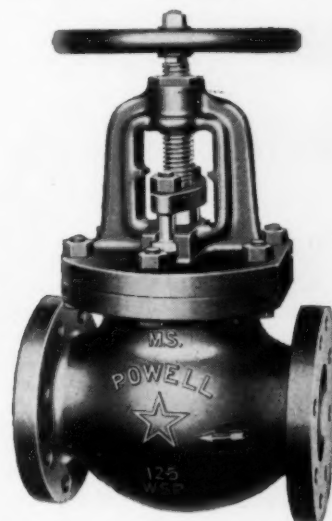


Fig. 457—125-pound All Iron Globe Valve with outside screw rising stem, bolted flanged yoke and regrindable renewable iron seat and disc.

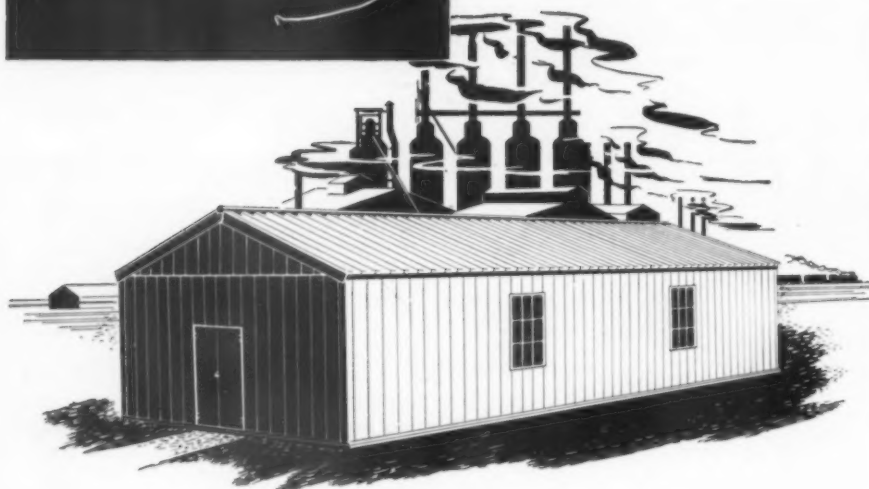
The Wm. Powell Company
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Standard ARMCO STEELOX Buildings are ideal for OFFICES, WAREHOUSES, GARAGES, UTILITY BUILDINGS, SMALL FACTORIES and other structures. Sizes range from 8 to 28 feet wide; 8 to 14 feet high, and almost any length you want. A wide variety of doors and windows. Buildings delivered to site ready for immediate erection. Write us for complete data. Armco Drainage & Metal Products, Inc., 3475 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation.



ARMCO STEELOX BUILDINGS

The Smaller Producer

(Continued from page 344)

in which smaller producers may not need help. A purchase engineer arranged for a smaller producer to consult with the big company personnel department and get ideas on how to train labor. A buyer suggested special jobbing lines which a weldery might carry for the entire industrial community, arranged to have welding equipment sales engineers call at the small plant, thus built up the weldery as an emergency resource for his plant and those of his neighbors.

The end result of building up the small plant is the obtaining of desired goods and services at lower costs with higher values. But more than one purchase engineer confesses that he gets fun out of such chances to put his own specialized training and talents to work for somebody else in small supplier companies.

1 1 1

Floor Maintenance

(Continued from page 135)

Characteristics to look for in a floor wax include non-skid or non-slip properties, durability, waterproofness and glossy appearance. Many claims are made for all types of waxes, but a few simple tests taken during actual use of a wax will best indicate whether or not it meets requirements. High quality wax, properly applied and kept dry, should not be slippery on any type of floor. Tests have shown that where waxed floors were completely dry and clean, maximum safety was shown in every case where rubber heels were worn, with somewhat less resistance for leather heels. When the floor was dry and dirty, the safety margin dropped off 40%, and about 75% when it was wet.

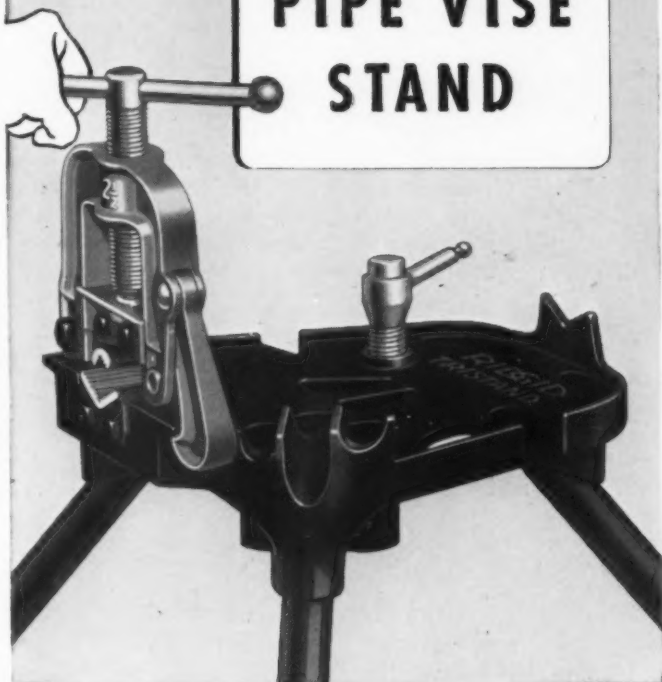
Durability, appearance and waterproofness or lack of them will be shown up in daily use of a floor wax. However, the best floor waxes of either type should be judged for water-proofness only after they have been thoroughly buffed an hour or more after application. This drying and buffing should give a quality wax a good, water-resistant finish.

Standard methods of cleaning are not always feasible when liquid has been spilled or greasy or oily spots have developed on a floor in a busy shop where machines cannot be stopped or workers interfered with. An excellent type of cleaning agent

(Please turn to page 348)

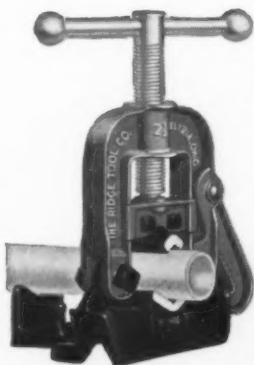
EASIER WORK

with this handy
**PIPE VISE
STAND**



RIDGID Tristand is also a portable work bench

● Thousands of pipe experts use the tip-proof **RIDGID** Tristand both as a pipe vise *and* an on-the-job work bench. Hinged legs fold in and chain for easy carrying. Roomy tray for oil can, dope pot; special slots for hanging tools. Pipe rest and three handy benders that won't dent pipe. LonGrip tool steel vise jaws hold pipe firmly, won't mar polished pipe. The Tristand is made also with chain vise, capacity 4." Buy these handy efficient vises at your Supply House.



◀ **RIDGID** Pipe Vises include bench, post, stand and kit models—yoke and chain.

This Trouble-Free PIPE WRENCH Saves You Money

RIDGID Wrenches offer
you exclusive advantages
that save time, work and cash

● The important work-saver features which have made **RIDGID** the outstanding choice of pipe experts all over the world mean fast easy work and real economy for you. Housing is guaranteed against breakage or distortion—no repair expense or bother, ever. Adjusting nut in open housing spins easily in all sizes, 6" to 60." Handy pipe scale on hookjaw. Instant-action non-slip, non-lock jaws. Powerful comfort-grip I-beam handle. **RIDGIDS** save you time and money. Buy them at your Supply House.



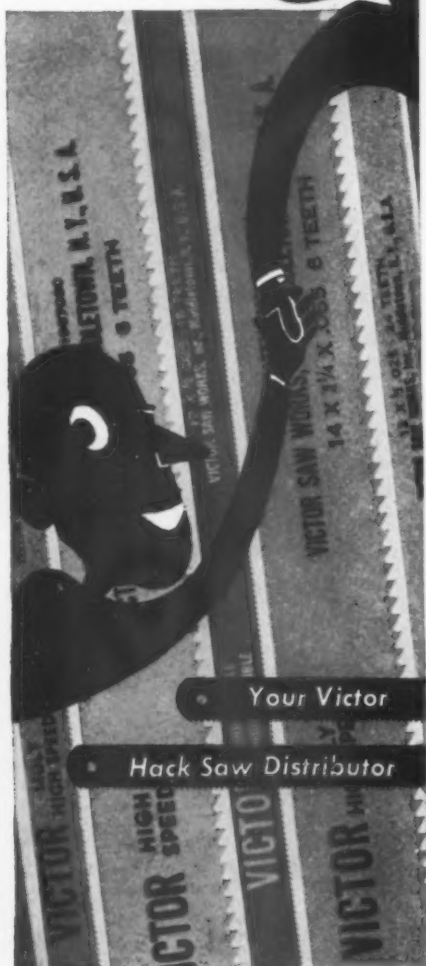
RIDGID Strap Wrench
won't mar polished pipe
or tubing.

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best man
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Get acquainted with your Victor Hack Saw distributor. He'll be glad to show you how to cut metals and non-metals easier and faster, and cut costs too with Victor Hack Saw Blades.

And while you're at it ask him for the NEW Victor Wall Chart for your workshop—the Victor Metal Cutting Booklet for your pocket or tool kit—both are packed full of helpful information... ABSOLUTELY FREE.

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Makers of Hand and Power Hack Saw Blades, Frames and Band Saw Blades

Floor Maintenance

(Continued from page 346)

for this situation is a dry, granular anti-skid floor compound that quickly absorbs oil, coolants, grease, fats, water, syrups and liquid deposits of almost any type, making the floors non-slippery and safe. One large company, pointing out in its safety manual that "a man working on floors covered with oil, grease or water, has as little control as a pig on ice", has placed the material in every department and urged its employees to use it regularly.

The absorbent material, in addition to setting up a "carpet of safety" around machines that spill dangerous liquids on the floor, can be used in some instances to renovate old floors. It pulls oil from 1/4 to 1 in. deep in the floor in the manner of a poultice, and breaks down the build-up of dirt, oil, chips and other matter that may have been worked into old floors for many years.

It is non-combustible, even after having been used several times and become oil-soaked. Sawdust is not recommended for such purposes, as it greatly increases the fire hazard, and if allowed to remain in consider-

able quantities in unventilated places after being soaked with certain animal or vegetable oils is very likely to produce fire through spontaneous ignition.

Buying the Right Equipment

Buying the proper equipment for a good floor maintenance program involves the same factors of quality, performance and suitability for a particular job that are met in the purchase of wax and cleaners. All types of machines, usually electrically operated, are available, with a variety of attachments for scrubbing, grinding, steel wooling, polishing, troweling, waxing, buffing, and dry scrubbing. Vacuum cleaning by portable machines is necessary in many large plants for the removal of dust, dirt, grit, etc., from shop floors prior to the regular cleaning operation, and numerous machines for general and special applications can be purchased. Here again it is good policy to follow the manufacturer's recommendations closely, and to call on him for advice and assistance when necessary. Most reputable suppliers of this kind of equipment have departments specifically set up for aiding customers on general and special cleaning problems.

Fibre Board Containers

(Continued from page 137)

cently granted a permit under Rule 49 for a shipper to use a lower Mullen test box provided that it meets a minimum top to bottom compression test.

So far we have not said much about the designing of fibreboard containers. As we become more familiar with testing methods for specific commodities, we realize that our container designs must also be affected by the nature of the contents.

Thus, with liquids in glass, we find by laboratory tests that glass breakage may occur in the center of the package and not always at the edges and corners. The experienced designer has accordingly adopted the maxim: "Build from the center out." By this he means that it is of the utmost importance to protect the bottles from each other and to produce a snug fit. We might even go so far as to say that strong and proper inner packing here is almost more important than the test of the outer case. Here the designer likes to check his progress with some form of rough handling such as the drum or drop tester.

For packing expensive, fragile objects like small radios, television sets

and certain furniture items, the designer has to think of outside blows and impacts so he provides creased sheet "air cushions" around the six sides and also uses various creased and/or die cut sheets to keep the contents from shifting. Here again the design is checked by drum and drop tests, or, if the case is large or heavy, he may add the impact test.

Some commodities present very difficult combinations of heavy weight at one end and fragile portions at the other end. An electric fan is a good example. At one time it was thought necessary to provide very elaborate inner packing to protect the blades and wire guard. Today we know that if we can lock the heavy base and motor in such a way that they will not shift inside the box, we can leave the blades alone.

Heavy or massive objects such as washing machines or refrigerators usually require a wooden skid to which the contents and the fibreboard box and packing are securely anchored, usually with steel straps. One of the greatest developments in fibreboard designing has been the remarkable replacement of wood by fibreboard for extra large items such as electric refrigerators weighing sev-

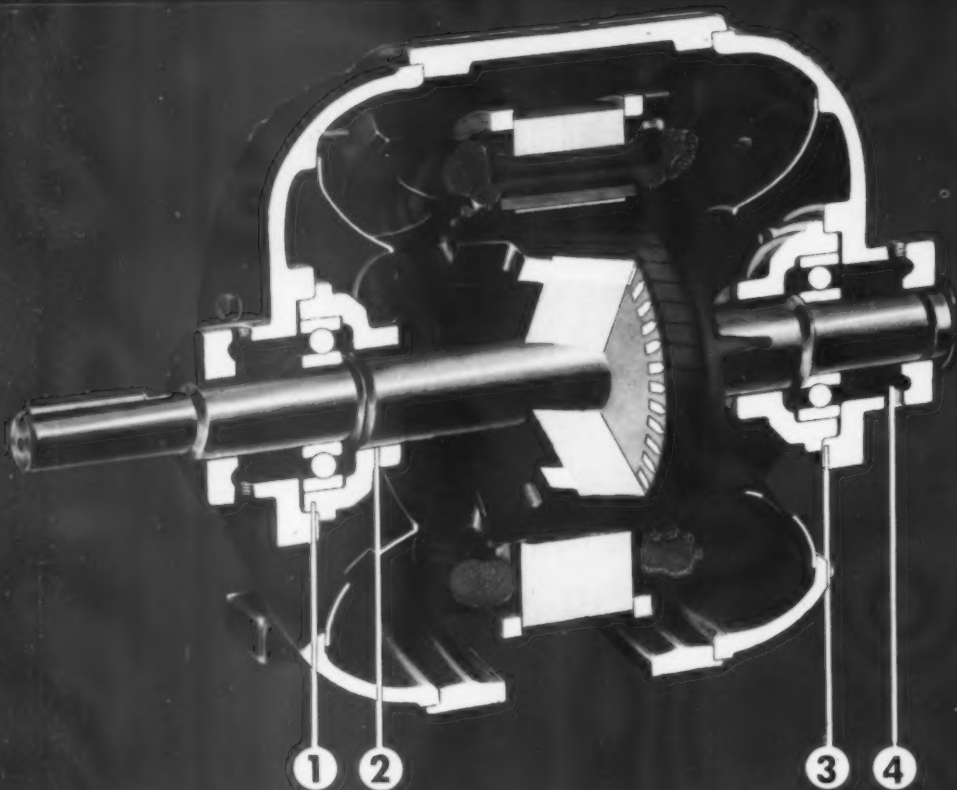
(Please turn to page 352)

A black and white photograph of a GE Tri-Clad motor. The motor is dark and metallic, with a circular GE logo on its side. A large, intricate spider web is draped over the top right portion of the motor, symbolizing long-term, unobstructed operation. The background is dark and textured.

**YOU CAN'T BEAT A
TRI-CLAD MOTOR FOR
EASY MAINTENANCE**

GENERAL  ELECTRIC

**HERE'S
WHY**



Notice (1) how Tri-Clad bearings are surrounded by and rigidly supported in solid cast-iron housings. Compare the long, close-running fit between housing and shaft (2) with other motor bearings. Examine the tight rabbet fit between inner cap and end shield (3) which keeps dust and moisture out and lubricant in. See, too, the pressure-relief greasing system (4) that makes it easy to lubricate if you need to.

You can't beat a **TRI/CLAD** motor for easy maintenance

A **TRI-CLAD MOTOR** will run safely without lubrication for years—for as long as any other general-purpose motor you can buy. The big thing is—it's *grease-gun easy* to lubricate a Tri-Clad if you need to.

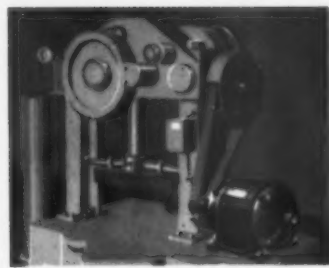
You don't have to take a Tri-Clad motor down and disassemble the bearings to lubricate it. You don't have to follow special instructions. A standard gun and a good grease are all you need.

And remember, Tri-Clad gives you all the extra protection that only cast-iron structure can give . . . Extra protection against rust and corrosion . . . Extra protection against mechanical abuse and permanent distortion . . .

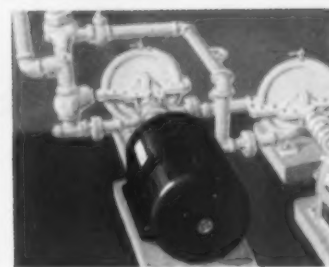
Extra protection that has been proved in more than 5 billion hours of rough-and-tumble industrial service.

WANT TO SEE FOR YOURSELF? Tri-Clad motors in nearly all types and ratings are ready for **IMMEDIATE SHIPMENT**. Contact your nearest G-E Office or write Apparatus Dept., General Electric Company, Schenectady 5, N. Y.

There's a Tri-Clad
motor for every
industrial need!



G-E open (dripproof) induction motors for constant-load, constant-speed applications. From 1 to 2000 hp.



G-E totally enclosed motors for operation where dust or corrosive fumes are a hazard. From 1 to 1000 hp.



G-E capacitor motors for use on fans, blowers, pumps and compressors with single-phase power. From $\frac{3}{4}$ to 5 hp.



G-E Type ACA induction motors for adjustable speeds—provide 3 to 1 speed range. From 3 to 200 hp.

GENERAL  ELECTRIC

YOU CAN'T BEAT
TRI/CLAD
REG. U.S. PAT. OFF.
EXTRA
PROTECTION

Machine Heliwelding turns out a better milk pail at lower cost



HINMAN MILKING MACHINE COMPANY, of Oneida, N. Y., formerly purchased drawn steel pails to be sold in conjunction with their milking machines. They decided to fabricate their own pails from stainless, since their experience showed the need for an improved design, of sturdier construction than they were able to get from available sources.

John View, Airco Technical Sales Representative, was consulted and he suggested the Heliwelding process with the Airco machine holder, using Airco Helium. After Heliwelding, only a small amount of polishing was necessary to finish

the job, making the pails ready for immediate shipment.

This method was so successful that the customer was able to produce a top quality pail with a tidy saving in money — and time.

TECHNICAL SALES SERVICE — ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

To assure its customers of high efficiency in all applications of the oxyacetylene flame or electric arc, Air Reduction makes available the broad, practical experience of its nationwide Technical Sales Division personnel. The collective experience and knowledge of these specialists has helped thousands to a more effective use of Airco processes and products. Ask about this Airco "Plus-Value" service today. Write your nearest Airco office. (In Texas: Magnolia Airco Gas Products Company . . . On West Coast: Air Reduction Pacific Company)



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Offices in Principal Cities

Headquarters for Oxygen, Acetylene and Other Gases . . . Carbide . . . Gas Welding and Cutting Machines, Apparatus and Supplies . . . Arc Welders, Electrodes and Accessories



● Tapered Compression Spring
for strainer in intake valve assembly in water well

*The Right SPRING
at the Right Price!*



Long-life springs mean true economy. Reliable springs are always made, not on a basis barely adequate for the demands to be made on them, but with a safe margin of mechanical power that insures long life and positive operation.

On the other hand, we try never to advise the purchase of springs too good or too expensive for the job. For instance, you might needlessly order ground ends, or specify closer tolerances than actually required. Or perhaps a minor change in design or materials can cut your costs by a worth-while amount. On the simplest or the most complex job, Reliable will "know the score" and will save you money, time, and trouble. For TOP quality springs, wire forms or spring stampings for any purpose, consult Reliable.

Ask for Bulletin "Specifying for Economy in Springs."

THE RELIABLE SPRING & WIRE FORMS CO.

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Representatives in Principal Cities



QUALITY CONTROLLED



**FROM TREE
TO YOU**

ORANGE CORE GUMMED SEALING TAPE

... is so uniformly good ... so utterly dependable. From raw pulp to the finished roll, every step in the manufacture of Orange Core is controlled by experts—all in one plant. That's your guarantee of the consistent high quality that's made this tape "America's Most Popular Brand." Ask your supplier for Orange Core today.



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Company

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The Willys-Overland Forge, one of America's largest, has the men and machinery to turn out 80,000,000 pounds of forgings a year. Because the men are experienced and the equipment is modern, this means a capacity to produce 80 million pounds of *quality* forgings.

For your forging requirements, large or small, The Willys-Overland Forge offers this huge capacity, plus nearly half a century of experience. Write for complete information.

Part of The Willys-Overland Forge, which covers 5 buildings.

THE WILLYS-OVERLAND FORGE

WILLYS-OVERLAND MOTORS, INC.
TOLEDO 1, OHIO

DROP FORGINGS • HOT PRESS FORGINGS • UPSET FORGINGS

UNIT BINS AND SHELVING

AVAILABLE FOR IMMEDIATE DELIVERY

-WE FURNISH THE STEEL!



Pictured above is a Fort Steuben 6-shelf Commercial Unit. Uprights are of 13 gauge angle stock in all standard heights, shelves are pressed from 18 gauge sheets and are available in all standard sizes. According to the Fort Steuben unit plan, uprights are drilled to permit placing of shelves at 1½" intervals over their entire height, and backs and sides may be used at will. At right, is shown a single or starting unit for closed type shelving.



Fort Steuben Auto Parts Bins (see left) are particularly designed for parts storage, not only in the automotive industry, but in many other industries as well. The need for indexing is met through the use of full shelf-length label holders, standard on all Parts Bin Shelving. Lightning-fast adaptation of these bins to frequent changes, required in sectionizing storage requirements is effectively accomplished through the use of patented snap-in dividers, instantly adjustable on 1" centers over the entire shelf width. Shelf heights are adjustable on 1¼" centers, and several combinations of sizes are available. Bins to meet all car manufacturers planographs or bin system requirements are available. Dealers and Manufacturer's Agents are invited to write.



Fort Steuben Metal Products Co.

Steubenville, Ohio • Phone: Steubenville 26204

Fort Steuben Metal Products Co.
Steubenville, Ohio

Gentlemen: Please send me your complete catalog P.

Name _____ Title _____
Company _____ Street _____
City _____ Zone _____ State _____

Fibre Board Containers

(Continued from page 348)

eral hundred pounds. One of the largest producers is now shipping all its domestic refrigerators in a corrugated package with only the bottom skid made of wood. You can read the specifications under Package #994, which was added to the Classification August 18, 1948 and carries no size or weight limit. They are saving money and having hardly any claims on this package which has been in use now for about a year on a Rule 49 permit. Don't think, however, that this design wasn't the result of many hundreds of man-hours in design and re-design and laboratory testing.

We could extend this list to dozens of other commodities, each with its own problem of design, testing and re-design. Suffice it to say, however, that the modern fibreboard case designer is using intelligence, experience and scientific testing methods in place of crossing his fingers and praying, "I hope—I hope."

1 1 1

ELECTRIC LABEL DISPENSER FOR SELF-ADHESIVE LABELS

A new automatic electric label dispenser that mechanizes hand labeling has recently been introduced by the Avery Adhesive Label Corporation, Monrovia, California. According to the manufacturer, the dispenser now makes possible production-line labeling speed, without the large capital expenditures required for specialized labeling equipment.

Extensive tests have shown the dispenser cuts labor costs by as much as 75%. Marketed under the trade name of Kum-Kleen it delivers individual self-adhesive labels quickly and automatically to the operator ready to apply directly to the product without moistening.

The Kum-Kleen Dispenser is light and portable, operates on either AC or DC current and may be plugged into any convenience outlet. A patented self-threading mechanism permits change-over of labels and loading in five seconds or less, without the use of spools, reels or cores. Constant speeds of delivery are set by a simple rheostat dial adjustment or intermittent operation produced by use of a dual control foot switch.

The dispenser has a cast aluminum alloy housing, self-lubricating bearings, standard electrical components, and is powered by a 1/50th H.P. universal electric motor. The weight is 13 lbs., dimensions are 5½" x 7½" x 12½" overall. It delivers up to 100 lineal inches of labels per minute.

Kum-Kleen Self-Adhesive Labels are applied without moistening, adhere to any clean, smooth surface, will not curl or pop up due to humidity and temperature changes, and can be instantly peeled off when no longer required.



There's no crimp in our Style

Illustrating just one of the many points of WITT Can superiority, let's examine their wear-absorbing sides. Designed to laugh at the brutal beating given garbage and ash cans, WITT Can sides are not crimped, not merely shallow waves that look like corrugations. Instead, they're full length, deep, even, rolling corrugations which add maximum strength to special steel.

With that strength as a base, WITT Cans have heavy reinforcing bands top and bottom, a strong "dished" bottom, sturdy handles and a closely and permanently fitting one-piece lid. Hot dip galvanized with EXTRA heavy coating of zinc to defy rust and effects of food acids, WITT Cans have an overall durability—proved by independent laboratory testing to outlast 3 to 5 ordinary Cans.

Have your supplier place your order on his books

THE WITT CORNICE COMPANY

Cincinnati 14, Ohio

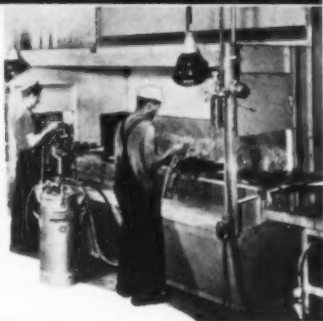
"Originators of the Corrugated Can"

Witt Cans

CUT SPRAY BOOTH MAINTENANCE *with*

DETREX COMPOUNDS

Detrex wall coatings and water conditioners reduce down-time and maintenance costs in every paint spray booth where they are used. Here's why:



DETREX WALL COATING MATERIALS, PR and PRD, are quickly applied to spray booth walls by brush or spray gun and give excellent coverage. At clean-up time, the coating and accumulated over-spray are readily removed in a matter of minutes.

DETREX WATER CONDITIONERS and paint deflocculants, WS and WSF, for wet spray booths make all types of paint non-tacky. Thus they prevent fouling of nozzles—guarantee continuous maximum flow in the entire recirculating system—and maintain the efficiency of the exhaust system.

All cleaning and finishing compounds manufactured by Detrex are shipped on a guaranteed performance basis for thorough test in your plant. Write for complete information.

Degreasing Machines and Safety Solvents • Metal Parts Washers
Alkali and Emulsion Cleaners and Strippers • Processing Equipment
Spray Booth Compounds



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DETROIT 32, MICHIGAN

Corporation

TOUGH FASTENING JOB?

CALL
Chicago Rivet

Our engineers have lowered assembly costs and improved the products of hundreds of manufacturers, and they can probably do the same for you. When you call on Chicago Rivet fastening specialists, you get the benefit of 26 years of solving hard fastening problems.

Free FASTENING CLINIC

Send us a drawing or unfastened sample or sub-assembly of your product. We will gladly analyze your fastening needs, recommend the type of rivet and Chicago Automatic Rivet-Setter to do the job best, and submit estimated production rates. No charge or obligation.

(Illustrated)
Model 121
Chicago Automatic Rivet-Setter

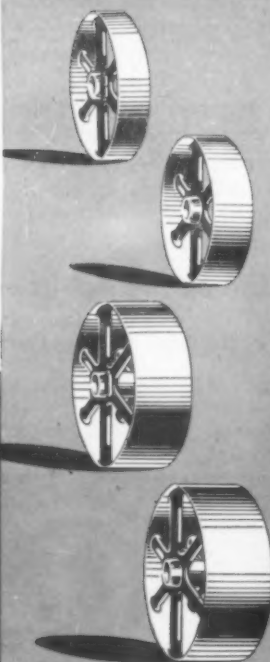
CHICAGO RIVET & MACHINE CO.

9607 W. Jackson Blvd., Bellwood, Ill. (Chicago Suburb)

Automatic Rivet-Setters • Tubular and Split Rivets in all Rivet Metals

C-3

Production Runs in Cast Iron Pulleys



With a record of more than 50 years service to some of the largest manufacturers in the United States, Pyott Foundry & Machine Co. can be relied upon to fill your cast iron pulley requirements promptly. Pulley range is from 3" up to 102" in diameter. Both solid and split iron pulleys for ordinary double belt service are machine molded up to 72" in diameter and up to 24" in face width. Larger sizes or unusual designs are swept or floor molded requiring no patterns from customers.

Pulleys may be had with solid rim and hub, solid rim and split hub, or split rim and hub and in single or multiple arm types from Pyott's standard patterns. Wide faced conveyor pulleys are standard products of Pyott. All pulleys are accurately machined and bored to meet your shaft size requirements.

If pulleys are special in design or other than standard, enclose a blueprint or dimension sketch of each pulley and state, if possible, your maximum and minimum monthly production requirements.

WRITE FOR FREE CATALOG

PYOTT

FOUNDRY & MACHINE CO.

328 N. Sangamon St. • Chicago 7, Illinois

ADVANTAGES OF CAST IRON PULLEYS

1. They give long trouble-free service
2. Smooth running because they are accurately machined and balanced
3. Distortion proof under high speeds or heavy loads
4. Best for speeds up to 4,500 FPM
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6. Competitively priced

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DETECTO-GRAM NEW PACKING SCALE

Another Detecto-Gram Scale for weighing your ingredients accurately. New Model #8800 brings to your heavy duty weighing jobs the mechanical accuracy previously found only in small scales. Capacity 1/4 ounce to 60 lbs.

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SPECIFY
HODELL
FOR QUALITY CHAIN

For 60 years Hodell has built dependability into every link of 157 varieties of welded and weldless chain. Throughout America, for every chain job, industry specifies Hodell . . .
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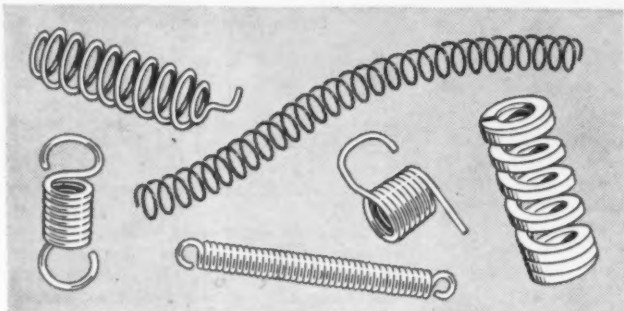
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THE HODELL CHAIN CO.
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SPRING SELECTION

OFTEN PROVES EXPENSIVE!



There is a science in selecting the most practical, economical springs for particular applications. Should you choose springs for your products "because they were used in the old ones" or "I thought we'd try these," you'll probably find that it proves very costly.

It's a simple trick to specify the *right* springs if you have a Lewis Spring Engineer check the requirements and make his recommendations. Many times the Lewis Engineers have saved manufacturers hundreds, and even thousands, of dollars by suggesting the use of more economical, equally effective, springs for the jobs to be done.

You can depend on the Lewis Spring Engineers to offer you sound, reliable advice based on years of experience in spring design, manufacture and applicability to various products.

Why not take advantage of the Lewis Engineer near you? He'll be only too happy to give you his recommendations without obligation to you. Then you can be sure that you're not paying for "fancy extras" that don't contribute to product efficiency.

But call in the Lewis man early — while your product plans are in the blueprint stage — so he can help you.

LEWIS SPRING & MFG. CO.
2648 NORTH AVENUE, CHICAGO 47

Lewis
PRECISION
SPRINGS

THE FINEST LIGHT SPRINGS AND WIREFORMS
OF EVERY TYPE AND MATERIAL

HOLO-KROME

Completely Cold Forged

Socket Head CAP SCREWS

They've GOT to be stronger!

Holo-Krome Socket Head Cap Screws are completely cold forged without drilling, broaching or machining. The H-K patented process of manufacture flows the fibres in a continuous unbroken line from end to end. Completely cold forging not only preserves the inherent strength of the steel, but actually increases the strength at the vital points of a Socket Cap Screw.

ETCHED CUT-
WAY SECTION
SHOWS CONTIN-
UOUS FIBRES

H-K Distributors are
always ready to
serve you from their
warehouse stock.



FIBRO FORGED
SCREWS

THE HOLO-KROME SCREW CORP. HARTFORD 10, CONN.

LETTERS...

SAUCE FOR THE GOOSE

I have found your report "Is Today's Salesmanship Equal To The Job?" (August, 1948, issue, page 97) extremely interesting.

It occurs to me that a similar survey on "Are Today's Purchasing Agents Equal To The Job?" might be very interesting, as I believe that such a survey should be of value not only to the purchasing officials of various companies, but also to industrial salesmen themselves.

L. C. Higgins, National Defense Coordinator
The Glidden Company,
Cleveland 2, Ohio.

ORCHID

We enjoy reading PURCHASING.

M. A. Sayles, Purchasing Agent,
H & H Parts Company, Inc.,
Wichita 5, Kansas.

LOUIS INSTEAD OF FORD

During my vacation this summer, a package addressed to me was received here and for some unaccountable reason was not given to me upon my return. This package just came to light today and I was surprised to find therein a bundle of Acme News Photos, mostly of Joe Louis.

Undoubtedly, this was shipped to me in error and is being mailed back to you today. I never received the Ford Issue. Perhaps that is what was to have been shipped to me instead of the pictures.

B. H. Orloff, Purchasing Agent,
Columbia Broadcasting System, Inc.
Chicago 11, Illinois.

Our print shop erred. The Ford PURCHASING Issue has been sent to you and the Louis photos have reached their rightful owner.—Ed.

REQUIRED READING

I thought you would be interested in knowing that we have decided to use the Ford issue of PURCHASING as one of our assignments in the first-year course dealing with manufacturing problems. We feel that your organization and the Ford people deserve a great deal of credit for making this material available.

K. A. Hill
Assistant Professor of Management
and Industrial Relations
The Amos Tuck School of Business
Administration
Dartmouth College
Hanover, N. H.

BUDDING P.A.

I am a student at Boston University, in the process of completing an important term paper, a survey on the occupation of purchasing agent. I find that statistics on this field are extremely difficult to obtain. Can you answer the following questions for me?

1. What is the number of purchasing agents employed nationally?
2. What is the number of purchasing agents employed in the Boston area (or in the area of New England States)?

3. What is the estimated future need for workers in the field?
4. What are the chances of securing a position in the near future?
5. What are the beginning average yearly earnings?
6. What are the most common annual wages received?

Arthur D. Quill

The National Association of Purchasing Agents now has a membership of 11,300. The potential has been placed as high as 30,000. This would include all of industry with centralized purchasing, as well as educational, institutional, commercial and government organizations. About 10,000 manufacturing organizations have centralized buying. An estimated 10 per cent is in the New England States. The future of purchasing as a profession is bright, as the advantages of centralized buying are being recognized and utilized to a steadily increasing degree. The prospects of obtaining a position in purchasing in the near future are good, depending to a considerable degree, of course, on the individual. This likewise applies to earnings. Some purchasing executives make as much as \$25,000 a year or more.—Ed.

BOUQUET

I subscribed to your magazine and have found PURCHASING very interesting and very helpful.

M. W. Gilchrist, Director of Purchases,
Public Service Co. of New Hampshire,
Manchester, New Hampshire.

PURCHASING AGENCIES

Just the other day the writer was glancing through some back issues of PURCHASING, and happened on a letter written to you from an independent purchasing agency. The letter and editorial was printed on page 332 of the March, 1948, issue of PURCHASING.

I should like very much to contact the writer of that letter and perhaps others in the same field, and am wondering if you would be so kind as to send me the name or names of any such agencies which you may know about. It is possible that an exchange of ideas, including means of establishing equitable fees, could be mutually beneficial.

Ken Godfrey
Ken Godfrey Procurement Service
Benton Harbor, Michigan

We know of no list of independent purchasing agencies. Interested parties may wish to get in touch with Mr. Godfrey.—Ed.

MEDIUM FOR DISCUSSION

I want to use the Ford Issue as a medium for discussion in the meetings of the Racine County Purchasing Agents Association of which I am President.

K. P. Hermes, Purchasing Agent
Andis Clipper Company
Racine, Wisconsin

PURCHASING COURSES

I am attempting to get into the purchasing field. Can you please send me any information that may be helpful?

Nicholas A. Spinelli,
Staten Island 4, N. Y.

Recommended books are "Purchasing," by Stuart F. Heinritz, 670 pages, published by Prentice-Hall, Inc., 70 Fifth Avenue, New York, N. Y., price \$5.35; and "Industrial Purchasing—Principles and Practice," by Howard T. Lewis, published by Business Publications, 332 S. Michigan Avenue, Chicago, price \$4.00.

Courses in purchasing are given by the following schools in the New York area: New York University, Washington Square, New York; College of the City of New York, School of Business and Civic Administration; Walter Hervey Junior College, New York; Rutgers University, Newark; and Fordham University, New York.—Ed.

TAKE HOME LITERATURE

Each month we try to go over as many periodicals as we can. PURCHASING Magazine is one that the writer takes home with him so as to give it more study and does send in for certain literature from time to time.

It is always interesting to read of our many good friends throughout the country and to keep in touch with all changes in purchasing procedure and new products coming on the market daily.

H. T. Huffield, Assistant Treasurer
The Capewell Manufacturing Co.,
Hartford 2, Connecticut.

SALESMANSHIP SURVEY

Your August survey (page 97) on the quality of today's salesmanship is most interesting. Our Director of Sales has requested that I obtain twelve copies. He wishes to use it as a subject to be addressed to his men at their next sales meeting.

R. F. Merriam, Purchasing Agent
Grand Home Appliance Company
Cleveland, Ohio

STEEL MILL LIST

Like every other organization using a great deal of sheets and plates and hot rolled bars and shapes, we are not getting the total quantities that we would like to have to keep our production up, and, therefore, are on the lookout for new sources if there is such a thing.

In attempting to send a man out to make contacts, it just occurred to the writer that you might possibly have a list of various rolling mills that roll low-carbon steels. By this we mean mills other than the well-known mills such as Bethlehem, Inland Steel, Carnegie-Illinois, American Rolling, etc. It is the writer's opinion that there must be quite a few unknown small mills.

W. R. F.
Kalamazoo, Mich.

Not unknown, the mills are listed, with product classifications, on pages 634 to 645 of the Conover-Mast Plant Purchasing Directory.—Ed.

Introducing our **7th** **PLANT**



We are pleased and proud to announce a new addition to our line-up of plants, all strategically located around the country to provide our customers with the service they have come to expect from Doehler-Jarvis.

Our new plant, which we have acquired from the Gordon Manufacturing Company, is located near Toledo on the Dixie Highway to Detroit. In this respect it offers marked advantages to us and our customers.

- Originally built for plating auto bumpers, the plant is ideally layed out and equipped for our purposes of chrome-plating large die castings.
- Being near our presently enlarged die-casting

plant in Toledo, it will provide excellent combination facilities from which to provide even more prompt and dependable service to our customers.

- Moreover, the added facilities will enable us to concentrate our Grand Rapids Plant on the plating of medium and small sized castings, thus still further strengthening our ability to provide the best in service to our customers.

The new Toledo Plant No. 2 will be rapidly brought to full scale operation, equipped with the latest in machines, teamed with the kind of Doehler-Jarvis "know-how" accumulated over 40 years of die-casting experience.

DOEHLE-JARVIS CORPORATION

The World's Largest Producer and Finisher of Die Castings

PLANTS IN: CHICAGO, ILL. • GRAND RAPIDS, MICH. • TOLEDO, O. • POTTSTOWN, PA. • BATAVIA, N. Y.



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BILLIONS OF NUTS.. AND ONE IDEA

NUTS OF EVERY SIZE AND DESIGN! Standard and Custom Made nuts, milled from the bar in steel, brass and alloys! And the entire volume of Westfield Nuts is produced with one idea: To furnish uniform, accurate nuts that speed up assembly rate production! . . . You'll get genuine economy with Westfield Nuts. You can often use smaller sizes that save real money. They improve the appearance of the finished job. Send us data for suggestions and prices or call for a Westfield engineer. Address Department 603.

WESTFIELD METAL PRODUCTS CO. INC.
WESTFIELD, MASS.

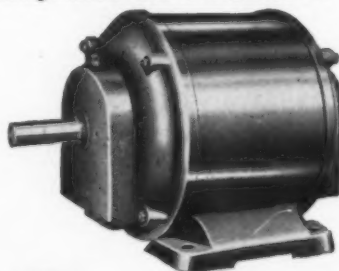
Did You Ever Shoot Fish in a Rain-Barrel? Easy isn't it?



But it's no easy job for motors to hold up under heat, dust splashing and dripping, unless, of course, they are VALLEY Ball Bearing Motors. Built to withstand the

"rugged" conditions of factory life, VALLEY MOTORS insure long continuous operation with heavy loads at high temperatures.

There's a VALLEY made in size and horse power to fit any machine design need.



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ELECTRIC CORPORATION
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Undisplayed (want-ad style), minimum charge 4 lines, prepaid. Figure forty-four letter spaces (five average words) to a line. Add one line for box number address; replies forwarded without charge.
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Contract Manufacturers since 1914
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METAL STAMPINGS
SPECIALTIES — APPLIANCES
For Industrial and Domestic Users

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NATICK, MASSACHUSETTS

TEXAS GRAPEFRUIT, something really different for Christmas gifts! Colorful, hand-woven, half-bushel basket from Old Mexico filled with Texas Red Grapefruit and sweet navel oranges, \$4.00; decorated domestic bushel basket mixed fruit, \$4.25; F.O.B. Harlingen. Low Express rate. Business executives — send your gift lists; we'll ship prepaid, bill later.

COMMUNITY GROVES, Harlingen 5, Texas

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Quantity Runs of Metal Stampings
24 Ga. to 1/4"
Your dies — Our steel
Single & Double Presses
100 Ton Maximum Pressure
Immediate Delivery

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1942 and 1943 L Boilers AVAILABLE NOW

3—Erie City Water Tube, three Drum, Stirling type, 210 HP, 200# W.P. Built 1942. With Pulverizers. Condition excellent. Priced to sell, F.O.B. Cars, Arkansas. 3—Kewanee Firebox, two pass. Series 500, Hi-Pressure, Heavy Duty 87 H.P., 100# W.P. Built 1943. With burners. Condition excellent. Priced to sell, F.O.B. Cars, Oklahoma.

OTHERS TO SELL
PETROLEUM EQUIPMENT, INC.

P. O. Box 887 Phone 26291
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FOR SALE

Stainless Steel Tubing

Approx. 7,000'
2 3/8" O.D. x .050 Wall x 16'-18'-20'
Type 347 — Welded
Carpenter No. 347
New & Prime — Guaranteed

Price — Below Mill

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Cad. 8277

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POSITIONS WANTED

PURCHASING AGENT—early thirties with 15 years experience in rubber & metals fabricating industries, including recent South American assignment. Extensive experience managing Purchasing, Receiving, Stores, By-Products, Shipping & Traffic Departments. Experience includes foreign shipping, customs & exchange control regulations. Presently employed. Married. Good knowledge Spanish. Will relocate. Former member N.A.P.A. Box 1203, PURCHASING, 205 E. 42 St., N. Y. 17

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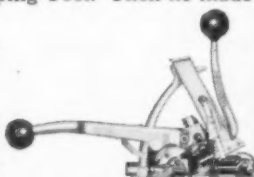


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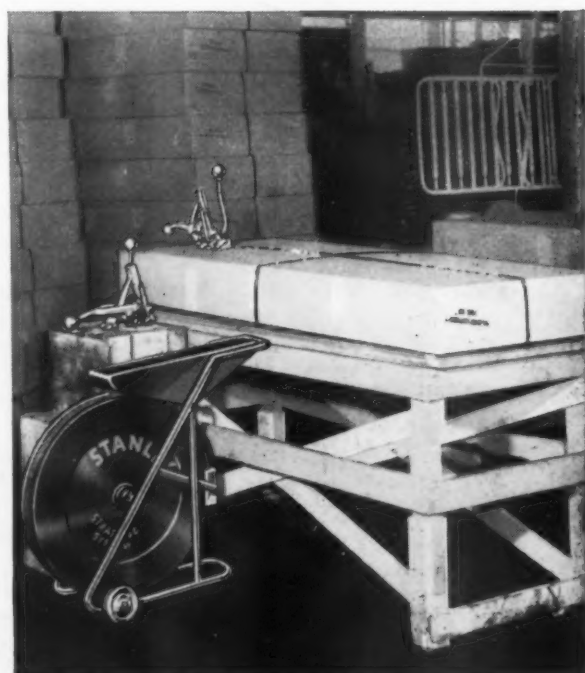
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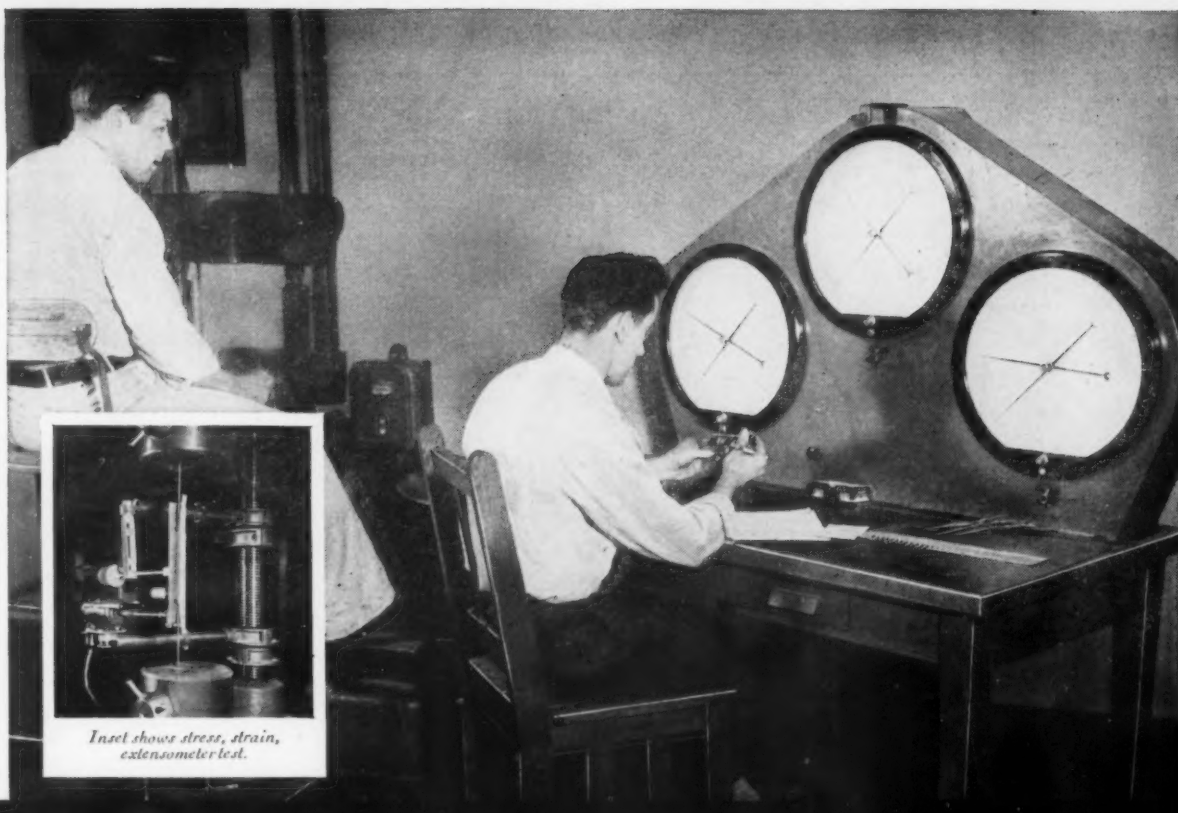
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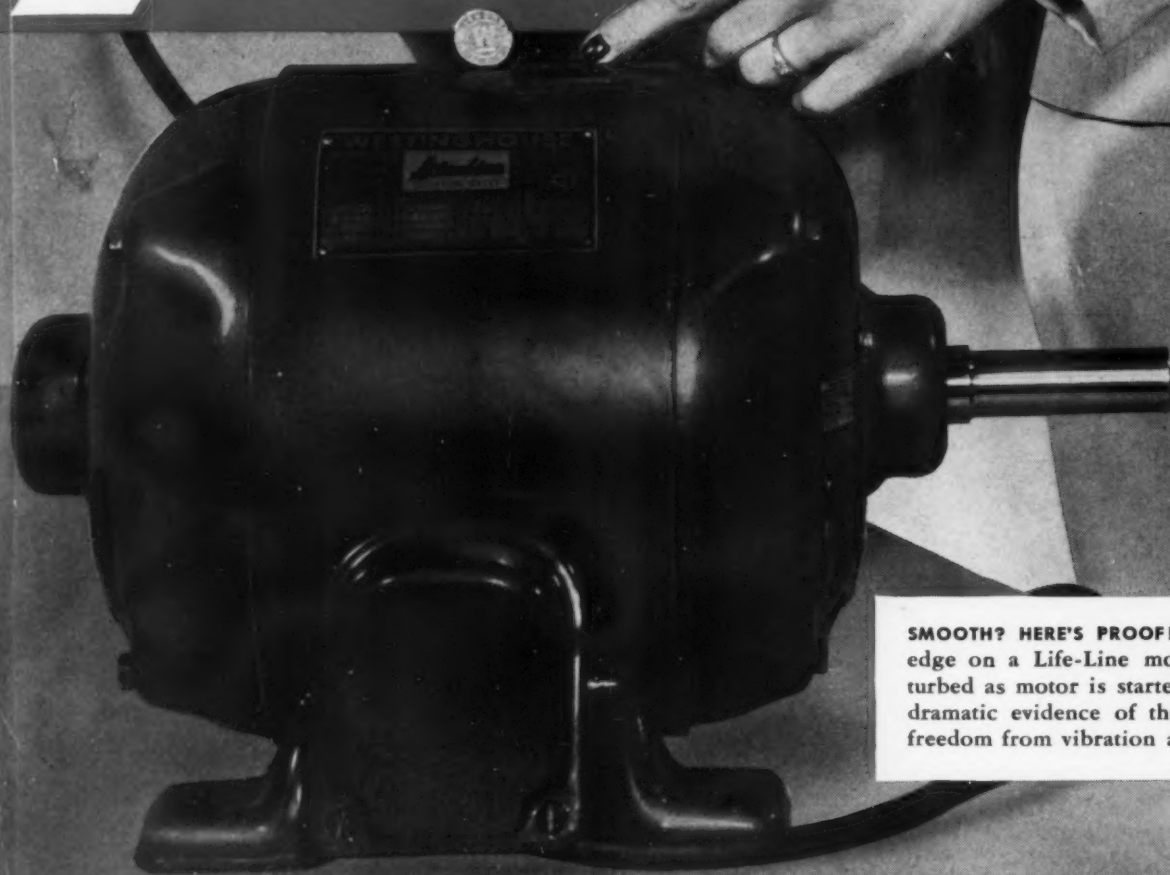
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J-21457-A



MOTOR "ASTHMA" CHECK. Sounds that shouldn't be there don't get by this "noise detective". Audiometer determines wave length of noise; sound level meter (left) determines decibel rating of the noise; sound analyzer (at right) then indicates the relative amount of the different frequencies resulting.

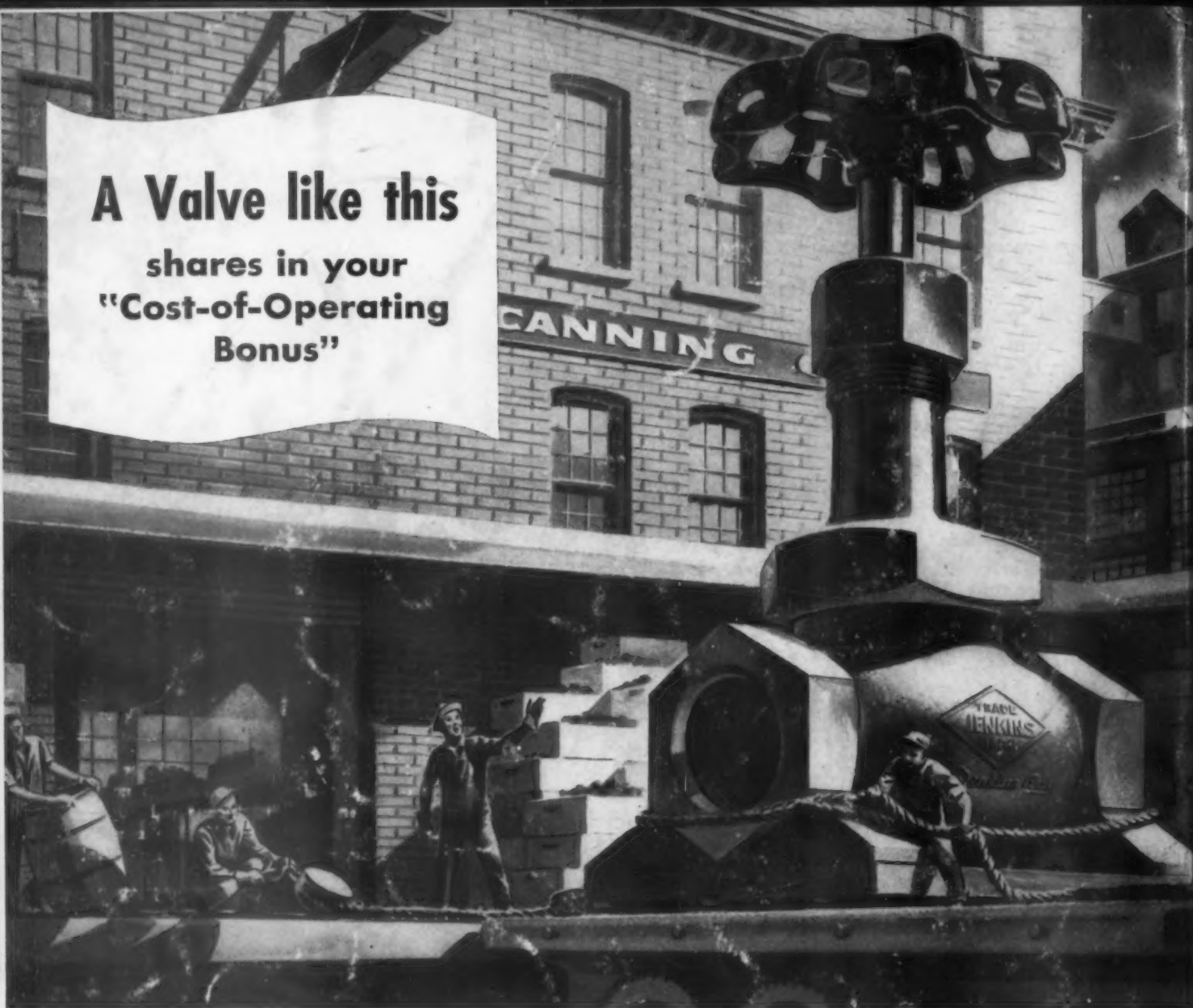


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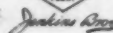
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